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ABSTRACT

The 2-year demonstration and research project involved 17 experimental (E) and 7 control (C) special class teachers of mentally retarded students (average CA 9-3 and 9-7, average IQ 68 and 65, respectively). All E teachers were given inservice training in a specific teaching curriculum (Social Learning Curriculum) and method (inductive method), and provided with on-going assistance from program consultants. Tape recordings and observational rating scales were used to assess teacher use of the method and curriculum. Students' progress in intelligence, achievement, personality development, and cognitive style was evaluated by formal tests. It was found that E teachers used the social learning curriculum and inductive method more consistently and effectively than did C teachers; E students were superior in personality development (striving for success) and aspects of divergent thinking; there was little correlation between teacher background characteristics and use of the curriculum and method. It was concluded that application of a socially oriented curriculum using an inductive teaching style achieves results consistent with needs of retardates at maturity (personality and cognitive characteristics consonant with critical thinking and independent behavior). (KW)

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FINAL REPORT

Proposal No. 5-0395
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H.G.
G.S.M.
E.M.

CHAPTER I

INTRODUCTION

Through studies of the efficacy of special classes for the educable mentally retarded, attempts have been made to establish what has been heretofore a popular belief; namely, that special classes for the children are more effective as educational settings than are regular classes. Despite variations in design, time and place, they are all similar in their results, in that their conclusions are at best equivocal (Goldstein, Moss and Jordan, 1965).

One can infer, from a critical analysis of the design of efficacy studies, that the investigators were preoccupied mainly by the actuarial and administrative variables basic to special class constituency and organization. Child variables were usually confined to the traditional psychometric and vital data. Teacher variables were rarely considered. Program variables, where alluded to at all, were stated in rather gross terms. They were after the fact inferences that could be derived from the evaluative measures of either academic achievement or personality (Goldstein, Moss & Jordan,1965).

In an important sense, the majority of investigations of the efficacy of special classes departed from three assumptions. Firstly, it was assumed that the fact of children and teachers being together in a special classroom was based on the presence of an educational program relevant to the development of the children. Secondly, it was assumed that the presence of a teacher in the special class could be equated with the competence of that teacher to administer effectively the educational program. Thirdly, the assumptions of the presence of a relevant educational program and a competent teacher incorporated the assumption that the administration and management of the educational program was systematic and methodologically appropriate for educable retarded children.

Experience and research indicate that such assumptions are not warranted and are unsupportable apart from a rigorous objective assessment of the special class and its membership along each of the three dimensions expressed above. Of the three: relevance of program, appropriateness of methodology and competence of teacher, the most difficult to assess is the third. Program and methodology can be evaluated insofar as they correlate with their responsiveness to (1) the needs of retarded individuals at maturity and (2) the learning and personality characteristics of educable mentally retarded children.

In a study conducted in Illinois (Goldstein, Moss & Jordan, 1965), there was an attempt to account for the factors of the program, methodology and teacher's competence in addition to the usual elements of design such as sampling and measurement. Program was accounted for by having the four teachers use the Illinois Curriculum Guide (Goldstein & Seigle, 1958), as the foundation for pedagogy in their classes. Methodology was accommodated through the teacher's adherence to a perscribed inductive system of instruction in pedagogic and other transactions with his children. Teacher competence was defined operationally as the ability of the teacher to administer the educational program and to teach inductively in accordance with the standards required in the teacher education program then in force at the University of Illinois, and as evidenced by performance in the curriculum and methods course, and in practice teaching in special classes for the educable mentally retarded. All teachers in the experimental classes met or surpassed the standards for performance under the required conditions.

While the results of this study were, in many ways, as equivocal as those of earlier and concurrent investigations, there were indications that the merits of a socially (as opposed to academically) oriented curriculum and an inductive system of instruction produced results worthy of note. Those experimental children who were educable mentally retarded during the study (IQ 80 or below) achieved (at a significantly higher level) in language arts, arithmetic and in social knowledge than did similar children in regular classes. This, to some degree, is a departure from previous studies. But even more important is the finding that the experimental children were significantly superior to the control children in certain academic tasks involving conceptual abilities, i.e., arithmetic problem solving and productive thinking (Tisdall, 1962). These results could be construed as signifying the relevance of the curriculum and the inductive system for teaching.

Such a construction, however, needs to be approached with considerable reserve. There are so many other variables involved that a linear conclusion is not warranted. After all, the relevance of the curriculum cannot be established conclusively until long after the children leave school and establish their permanancy in the larger society . A suggestion of relevance, however can be found in the fact that the experimental children were more socially sophisticated by the end of the study than were the controls. This difference was most dramatic among children from deprived environments.

The appropriateness of the inductive system for teaching is a bit easier to establish. Since an inductive system, as compared with rote or deductive teaching, is most consonant with the learning characteristics of retarded children insofar as the evolvement of concepts is concerned, the fact that the experimental retardates were so consistently superior in tasks involving conceptual abilities supports the rationale for the employment of inductive teaching. This is particularly appropriate in the case of the Illinois study because of the immaturity of the children. With older children, where a repetoire of generalizations may be somewhat sizeable, a balance between deductive and inductive teaching is indicated. In the Illinois study, however, the level of the children's conceptual development indicated that induction should predominate and should be supported by rote teaching where concrete facts needed to underlay transactions leading to conceptual learning.

The law of parsimony being what it is, all that can be said about the competence of the teachers is that teacher competence was established to the satisfaction of the investigators as an after-the-fact phenomenon. That is, the results of the study bespeak the competence of the teacher. Beyond this, nothing specific is proferred as evidence of competence nor would the investigators defend either their criteria, or evidence for teacher competence, beyond the provincialism of their operational definition of competence.

Apart from the spottiness of the results, the most serious shortcoming of the Illinois Study is found in the fact that it cannot be generalized in thought or in deed to existing special class programs. The sampling procedure, limiting the study to children of school entering age, made for a homogeneity that is rarely found in existing special classes. The pre-study preparation by the teachers based on a single curriculum made for uniformities in substance and method not typical of special class programs. This was further compounded by the practice of employing the teachers during the summer to evaluate the activities of the preceding school year and then to plan ahead for the coming year. Beyond these, the amount and quality of supervision, the informational resources and the multi-disciplinary support were far better than what is usually found in special class programs.

In order to achieve even minimal facility for generalizing some of the practices substantiated in the Illinois study, it was proposed that the substantive (curriculum) and systematic (methodological) elements of the study be tried in more nearly typical special class settings. This meant that the constituency of the special class would vary along the usual actuarial lines as well as in the dynamic aspects of experience as they are affected by differences in age, intelligence and derivation. Also, teacher characteristics would vary in many important ways including preparation, experience and age. Within this context, it was felt that the constants would be the curriculum, the method and, to some degree, the supervision of teachers. This meant, of course, that all of the experimental teachers needed to be familiarized with the Illinois Guide and the inductive system of teaching. Provisions were made for an intensive training program, the details of which are contained in Appendix B. The roles of the project supervisors (hereafter referred to as consultants), including that of active contribution to the training program, are elaborated upon in Appendix C.

Beyond the differences between the present and the Illinois Study in sampling and teacher characteristics, it was obvious that the nature and extent of measurement would have to vary to accommodate differences in children as well as some of the knowledge acquired by the investigators in the course of the earlier study. Thus, while the variables assessed would be essentially the same for both studies, the methods and instruments would differ in order to accommodate the differences in the two studies. The accommodations in method and instrumentation of evaluation will be found in subsequent chapters.

In designing the present study, it was recognized that the nature of the investigation, the criteria for sampling, and the means for evaluation placed serious limitations on the "scientific" stature of the study as a whole. One needs to recognize that the "catch-as-catch-can" conditions for such a study -- the fact that the teacher, substance, and system have, at best, only face validity;

the fact that teachers in the "experimental" classes were volunteers, and that their students were concomitants of the teachers' volunteering; the fact that available descriptions of children thus captured were random in nature and vague in detail; the fact that modes for observing what occurs in a pedagogic setting are still crude; and the fact that measurement devices lack the level of efficiency required for this type of study. Due to these conditions, it is necessary that a conservative approach be employed. Thus, the concept of control, as it is usually applied in objective investigations, needs to be limited to comparison - both in fact and in action.

To confine views of this investigation to a realistic framework, it was decided that this should be predominantly a demonstration project wherein the demonstration consisted of (1) how teachers can be trained within the context of a specific teaching curriculum and method, (2) how teachers, thus trained, employ the program in a typical variety of special classes, and (3) how supportive staff, appropriate to such a program, work with teachers. In order to provide a basis for understanding the results of the foregoing, it is necessary to look for such results in the performance of the children with whom the curriculum and method are being demonstrated. Thus, data are provided in subsequent chapters which will serve as descriptors of areas of learning contained in the program as well as of the effects of the program itself. It is most important that the reader recognize that while these data are presented, analyzed and discussed within the conventions of more objective studies, they are fraught with all of the limitations inherent in a study of this type. The conventional data and statistical treatments are augumented by the observations and records of the consultants. The results of these observations are worthy of note and, in an important sense, have equal stature with the conventional data treatments because of the expertness of the observers.

In subsequent sections, the expectations for this investigation are stated in the form of hypotheses. The description of procedures and the results will be responsive to the hypotheses mainly as a style for communication between the investigators and the reader. Thus, emphasis should be placed on the demonstration aspects of the study as being the major intent with the data presented as indexes of how well the intent was met.

CHAPTER II

METHODS

TEACHER SAMPLE

Treatment Groups

In the teacher sample there were 24 teachers, seventeen in the E group and seven in the C group. The background characteristics of sex, college major, and highest degree earned for these two groups are presented in Table 1. All seven of the C teachers and fifteen of

Table 1

Teacher Characteristics on Sex, College Major, and Highest Degree Earned

	E Group (N=17)		C Group (N=7)	
	N	(percent)	N	(percent)
Sex				
Female	15	(88)	7	(100)
Male	2	(12)	0	(0)
College Major				
Special Education	10	(59)	2	(29)
Education - other areas	3	(18)	2	(29)
Non-education	4	(23)	3	(42)
Highest Degree Earned				
B.S.	14	(82)	7	(100)
M.S.	3	(18)	0	(0)

the seventeen E teachers (88%) were females. A x^2 could not be applied to these data, nor to any of the other dichotomous teacher data, as the expected frequency requirement could not be met. Thus, the Fisher Exact Probability Test (Siegel, 1956) was applied. To avoid the tedious calculations of this test, Finney's (1948) method for obtaining significance with this test was used. The E and C teachers were found not to significantly differ on any characteristics shown in Table 1.

In Table 2 the teachers' characteristics of age and teaching experience are shown. No significant differences were found. It is worth noting that the mean ages for the E and C groups are very

Table 2

Teacher Characteristics on
Age and Teaching Experience

	E Group (N = 17)		C Group (N = 7)		t
	$\overline{X}$	S.D.	$\overline{X}$	S.D.	
Age	35.06	12.21	35.43	10.78	-.07
Number of years teaching normals	2.76	5.57	2.43	3.73	.146
Number of years teaching mentally retarded	2.65	2.32	2.86	2.03	-.208
Number of years teaching other handicapped	1.06	2.817	0	0	.982
Number of years total teaching	6.41	7.36	5.27	3.59	.383

similar (i.e., 35.06 and 35.43 respectively). These mean ages conceal the dichotomous age distributions found for both the E and C groups. Nine (53%) of the E teachers were in the age group of 22-31 while four (57%) of the C teachers were in this bracket. In the older age group from 40-60 there were seven (47%) E and three (43%) C teachers. One E teacher was in the middle age bracket from 30-40. Thus the means for the E and C groups camouflage the fact that practically all of the teachers were either relatively young or old.

To describe the teacher and her performance, it also is necessary to describe her class. Table 3 shows geographic locations of the 24 classes. To categorize classes as urban, suburban, or rural, the population density per square mile based on the 1964 census

Table 3

Class Characteristics
on Geographic Location

	E Group		C Group	
	N	(Percent)	N	(Percent)
Urban	1	(6)	3	(43)
Suburban	13	(76)	4	(57)
Rural	3	(18)	0	(0)

figures was computed for each of the eighteen communities in which the 24 teachers worked. Densities of less than 1,000 people per square mile were classified as rural. Those from 1,000 to 10,000 were suburban and those above 10,000 urban. As can be noted from Table 3, one of the E classes (6%) and three C classes (43%) were urban. The majority of both E and C classes were suburban. No rural C class was found while there were three rural E classes (18%). No x^2 could be computed on these data because the expected frequency requirement could not be met. It did not seem meaningful to combine any of the categories; thus no statistics were used to analyze these data. However, a visual examination suggests that by the above standards the E group was more rural and less urban than the C group and both groups were located primarily in suburban communities.

Another variable which may affect teacher performance is total class size. The $\overline{X}$ and S.D. for the E class size was 10.12 and 2.41 and for the C group 12.00 and 2.60. The t for this difference was not significant.

In summary, the E and C teachers did not significantly differ on any background characteristics. The E classes were slightly more rural, while the C classes were more urban by demographic standards. Thus, for operational purposes there were no important differences in either E and C teachers or class characteristics.

Teacher Attrition

At the beginning of the study the original sample exceeded that stated in the proposal (twelve E and four C teachers) in order to take into account an anticipated sizable attrition. During the course of the study the sample contained a maximum of 38 E and twelve C teachers. By the end of the study 21 (55%) of the original E group had left and five (42%) of the original C group had left. Consequently, the anticipation of attrition was born out in that there was seventeen E and seven C teachers.

In Table 4 the reasons for leaving the study are presented.

Table 4

Reasons for Teacher
Attrition for E and C Groups

	E Group (N=21)	(C Group (N=5)
	N	N
Transfer	7	2
Full-time graduate study	2	0
Maternity	3	1
Retirement	1	1
All Project students left	1	0
Contract not renewed	3	1
Left New Jersey	2	0
Personal or unknown reasons	2	0

Most of the teachers in both groups left because of transfers either within or outside their districts. It is of special interest that three E teachers and one C teacher did not have their contracts renewed. Basis for non-renewal in all four cases was incompetence. Two E teachers and one C teacher were first year teachers, while one E teacher had no background or experience in special education or elementary education.

Student Sample

To be included in the student sample, a child had to be in the special class prior to the start of this study. He had to have a C.A. of less than 12-0 as of this date.

At the beginning of this study (1965-66) there were 245 E and 90 C students. By the end there were 148 students (116 E's and 32 C's). The E students had an attrition rate of 47% while the C students had a rate of 35%. The attrition of students was similar to that of teachers. The following contributed to attrition along with the usual factors of mobility and withdrawal: (1) if at any time during the study a student were transferred from a project teacher's class to a non-project class, he was dropped as a subject, and (2) if a project teacher were dropped, so were all of her students.

The student characteristics of sex, race, and social class are presented in Table 5. About one-half of each of the groups was male. No significant difference on sex was found between the groups with a chi square test.

Table 5

Student Sample Characteristics on Sex, Race, and Social Class

	E Group (N=116)		C Group (N=32)		X^2	P
	N	(percent)	N	(percent)	(on N)	
Sex						
Male	62	(53)	15	(47)	.21	.70
Female	54	(47)	17	(53)		
Race						
White	69	(59)	28	(87)	7.536	.01
Negro	29	(25)	4	(13)		
Jackson White [a]	18	(16)	0	(0)		
Social Class - Warner Scale						
Level 1	12	(10)	0	(0)	8.56	.20
Level 2	4	(3)	1	(3)		
Level 3	13	(11)	3	(9)		
Level 4	12	(10)	2	(6)		
Level 5	20	(17)	13	(41)		
Level 6	15	(13)	6	(19)		
Level 7	40	(34)	7	(22)		

As can be noted from Table 5, there was a significantly lesser percentage of non-whites in the E group. Three E classes were composed primarily of "Jackson Whites," a genetically isolated group consisting of a mixture of White, Negro and American Indian background who live in a relatively remote mountain area. The "Jackson Whites" and Negroes were combined and a X^2 of 7.53 on white vs. non-white students was obtained that was significant at the .01 level; therefore, the E and C students significantly differed on race.

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[a] A genetically isolated group consisting of a mixture of White, Negro and American Indian background.

[b] X^2 value based on white and non-white groupings. Negro and Jackson White groups combined.

The Warner social class ratings (Warner, 1960) also are shown in Table 5. A rating of "one" represents the highest social class while a "seven" represents the lowest. The majority of students in both groups were classified in the lowest three classes. However, slightly more E students were rated in the top two classes. The X^2 for these data showed that the E and C groups did not differ on social class.

In Table 6 the student characteristics on C.A., I.Q. and M.A. are shown. The average C.A. of the E students was 110.61 months or

Table 6

Student Sample Characteristics
on C.A., I.Q., and M.A.

	E Group (N=116)		C Group (N=32)		t	p
	$\overline{X}$	S.D.	$\overline{X}$	S.D.		
C.A. (in months)	110.61	18.90	115.12	14.80	-1.25	.30
I.Q.	67.78	8.82	64.56	7.10	1.90	.10
M.A. (in months)	74.90	16.39	75.34	10.43	-.15	.90

9-3 and for the C students it was 115.12 months or 9-7. The average I.Q.'s for the E and C group respectively were 67.78 and 64.56. The E's had a mean M.A. of 74.90 months (6-2) and the C's 75.34 months (6-3). There were no significant differences on any of these factors.

The student characteristics on academic achievement and social learning as measured during pre-testing are presented in Table 7. On each of the four sub-tests of the Metropolitan Achievement Test (M.A.T.)

Table 7

Student Sample Characteristics on
M.A.T., Lee Clark, and TOBI Pre-tests

	E Group (N=116)		C Group (N=32)			
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	t	p
M.A.T. (grade equivalents)						
Word Knowledge	1.57	.56	1.54	.53	.286	.80
Word Discrimination	1.58	.64	1.58	.51	-.011	.95
Reading	1.46	.49	1.50	.46	-.436	.70
Arithmetic	1.49	.60	1.47	.53	.193	.90
Lee Clark Readiness[a] (grade equivalents)	1.13	.62	1.22	.59	-.589	.60
TOBI (raw score)	17.49	8.31	16.91	6.01	.372	.70

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[a] The N for the E group was 91 and for the C group 24 on this test.

the E and C students obtained an average grade equivalent of 1.4 or 1.5. A visual analysis which was corroborated by the obtained t's suggests that there were no significant differences for the groups on academic achievement.

Because the scores on the M.A.T. were so low, the Lee Clark Readiness Test was administered. The average grade equivalent on this test for the E group was 1.1 and for C group 1.2. This difference was not significant.

On the Test of Basic Information (TOBI) the E group obtained a mean raw score of 17.49 and the C group 16.91. This difference, too, was not found to be significant.

In summary, at the start of this study the E and C groups did not differ significantly on the background characteristics of sex, social class, C.A., I.Q., M.A., academic achievement, or social learning. They did differ significantly on race with the E group having a larger proportion of non-whites.

Procedure

Selection of Classes and Teachers

Bergen county, New Jersey which includes urban, suburban, and rural settings was selected as the site of the project due to its proximity to New York City. However, when the anticipated quota of urban and suburban classes was not fulfilled in Bergen county, special classes in adjacent Essex and Passaic counties were included.

All primary and/or intermediate educable class teachers in each district within the respective counties were contacted. The Child Study Supervisor assigned to each county by the State Department of Education functioned as an informal liason between the project and the local districts. Since the duties of his office required direct responsibility for approval of state aid to district special education programs through periodical inspections and contacts, the Child Study Supervisor was the logical member of the county administration to initiate contacts with the local districts. He instituted the following procedure: (1) an introductory letter of endorsement of the project to the district superintendents, (2) a joint meeting between the district superintendents and the project staff who acquainted the administrators with a theoretical and logistical overview of the study, and (3) arrangement for follow-up meetings for the project staff to confer with district superintendents who were unable to attend the orientation meeting.

Superintendents informed their teachers and asked for volunteers for participation in the study. Project staff members met with volunteer teachers to discuss the nature of the study, the role of the teacher and the conditions of participation, namely, a voluntary commitment to participate for a period of two years and to cooperate with testing, observation, and evaluation. Final approval in all cases was obtained from the local board of education.

The possibility of randomizing teachers and their classes into E and C groups was obviated by the insistence of a majority of administrators that their teachers be in the E group as a condition of their participation. In addition, the teacher's career plans for the following three years were obtained. Teachers desiring to continue graduate work, leave the state, and/or change teaching assignments were discouraged from participation in the project.

Once the E sample had been identified, the remaining eligible teachers in each county were surveyed for participation in the C group. The same conditions as for voluntary participation were enforced.

An essential methodological innovation was introduced to control for student attrition. Since exposure to the E teacher for the two years of the study was an essential subject criterion, the rate of inter-class mobility of special class pupils would tend to contribute to student attrition. Therefore, several teachers who followed in the sequence of the district's educable classes were invited to participate as "back-up" teachers. As "back-up teachers," they did not start the project with the E students, but received them as they proceeded through the natural progression of the district's special education program. Therefore, within the administration framework and policies of the local district, the E students could move freely within the district classes and still be continually exposed to the E curriculum and method. The "back-up" concept was most applicable in districts with two or more educable classes. A total of five E and one C teachers entered the project as "back-up" teachers.

Teacher Training

The rationale underlying the experimental teacher training was to create a common conceptual framework for understanding and applying the curriculum and method central to this study in the face of diverse teacher backgrounds and experiences. Therefore, the content of the training course was organized on the premise that the teachers had no professional preparation for teaching the mentally retarded child. Thus, all the E teachers were exposed to the same uniform and systematic training program. All training was accomplished during the preparation year (1964-65) to facilitate the same teacher implementation date of September, 1965.

The E teachers participated in the preparation course consisting of fourteen one-hour sessions and three half-day workshops after school during the preparation year. All E teachers attended a three-hour follow-up training workshop. In addition, during the start of the first year (1965-66) the replacement teachers received a concentrated version of the original training course consisting of four half-day sessions on Saturdays. For details on these training sessions, see

Appendix B. During the preparation year the training course consisted of didactic and experiential aspects. First, the project director developed the theoretical model and classroom components of the inductive teaching method. Then a theoretical overview of the concepts and content of the Illinois Guide (Goldstein and Seigle, 1958) in the areas of social learning, language arts and arithmetic was introduced. After a curriculum area was completed on a didactic level, the assistant project director reinforced the lectures with a demonstration and discussion of relevant teaching materials, aids, textbooks, and/or films.

The entire training course was taught in the form of a traditional in-service training program with an emphasis upon lectures, demonstrations, and question and answer periods. The training area was a standard classroom in a local school building. Teachers were given reading assignments and were requested to experiment with the principles and content of the training course in their classrooms. The program consultants were available for assistance and consultation during systematic visitations to each class.

At the conclusion of the preparation course a series of three voluntary workshops were jointly conducted by the assistant project director and different "experienced" host teachers in their respective classrooms. The workshops were designed to demonstrate the latest teaching practices and materials in an actual special class context. The assistant project director concluded the workshop by relating the host teacher's presentation to the content of the training course and the objectives of the study. For a full description of these workshops see Appendix B.

During the first year of the study it became obvious to the program consultants that many E teachers had difficulty integrating the social learning curriculum into their program as well as teaching the basic skills in language arts and arithmetic. Therefore, the consultants devised the following supplements to assist the teachers: (1) Procedure for Assessing Social Studies Problems, (2) Language Arts Diagnostic and Remedial Manual and Overview, and (3) Sequence of Arithmetic Skills Manual and Overview. These are described in Appendix B. Each curriculum supplement was introduced at a required attendance workshop. The presentation and demonstration of the supplement was enriched by a display of the latest teaching aids, film strips, free materials, and books in each curriculum area. Finally, the curriculum supplements were related to the concepts and practices of the preparation course based on the social learning curriculum.

In summary, teacher preparation was an on-going in-service process that continued throughout the study. Training began with a traditional methods and materials type in-service training course.

The implementation of content into the special class programs was facilitated by the program consultants. Experienced "host" teachers contributed to the training by demonstrating successful practices and materials within the context of their respective classrooms. Finally, project teachers' evaluations of their own experiences with the curriculum and method led to modifications and alterations in both.

Role of the Program Consultant

Part of the treatment consisted of providing the E teachers with continuing consultations through the term of the study. Two program consultants devoted their time to this responsibility, each providing services to approximately half of the E teachers. Since the program consultants were not employed by the district and since some districts already had supervisory staff, the consultants were conceived of as fulfilling a role of "helping teacher."

Generally, the consultants assisted the teacher with any problem in instruction and/or management, helped the teachers implement the curriculum and method into the classes, coordinated project testing and observation programs, and offered support and encouragement as a fellow colleague in special education.

One of the first observations made by the consultants had to do with the differences in teacher competency. This was complicated by the fact of teacher dependency wherein certain teachers of reasonable competence asked for an inordinate amount of help while some less competent teachers asked for little or no help. A range of fifteen to 24 visits with a mean of 19.3 was made depending upon a reconciliation of the consultant's judgement as to the needs of the teacher as compared with the requests for help. In the course of the visits, a range of 21.6 to 50.7 hours with a mean of 32.3 was spent in observation while a range of 7.2 to 23.3 hours with a mean of 13.6 was spent on conferences. These data are shown in Table 8. In addition to classroom observation and consultation, the consultants fulfilled the following duties: (1) organized and conducted the workshops, (2) developed curriculum supplements in language arts, social studies, and arithmetic, (3) provided instructional materials, (4) gave guidance in the procurement of commercial materials, (5) compiled and maintained teacher observation summaries and anecdotal records, (6) acted in liason with community groups and the boards of education, (7) administered diagnostic tests to children with unique learning problems, and (8) made final teacher evaluations. Details on the function of the consultants are found in Appendix C.

Assessment of Teacher Performance

It was assumed that the effectiveness of the teacher preparation program could be measured by observing the extent to which the teachers put into practice both the curriculum and teaching method central to this study.

Table 8

Amount of Time E Teachers Seen by Consultants[a]

	1965-1966				1966-1967				Total for 2 years of Project			
Teachers Visited by Consultant A	No. of Visits	Time in Observation	Time in Consultation	Total Time	No. of Visits	Time in Observation	Time in Consultation	Total Time	No. of Visits	Time in Observation	Time in Consultation	Total Time
# 7	12	19.50	10.50	30.00	11	19.50	10.33	29.53	23	39.00	20.83	59.83
# 8	12	25.00	12.75	37.75	10	22.00	6.75	28.75	22	47.00	19.50	66.50
#19	11	17.00	8.17	25.17	10	24.75	8.75	33.50	21	41.75	16.92	55.67
#20	12	15.00	7.08	22.08	7	10.50	8.33	18.83	19	25.50	15.41	40.91
#23	12	15.50	14.00	29.50	10	14.00	9.25	23.25	22	29.50	23.25	52.95
#24	10	8.50	8.83	17.33	7	18.25	9.25	27.50	17	26.75	18.08	44.83
#28	9	28.00	9.92	37.92	9	22.75	8.50	31.25	18	50.75	18.42	69.17
#30	14	17.50	8.92	26.42	10	23.75	10.75	34.50	24	41.25	19.67	60.92
#32	11	10.50	8.58	19.08	12	20.50	6.92	27.42	23	31.00	15.50	46.50
$\bar{X}$ for A	11.44	17.39	9.86	27.25	9.56	19.56	8.75	28.28	21.00	36.94	18.62	55.58
Teachers Visited by Consultant B or C												
# 2	9	18.00	5.00	23.00	9	12.25	2.83	15.08	18	30.25	7.83	38.08
#12	10	13.67	5.00	18.67	11	15.75	3.00	18.75	21	29.42	8.00	37.42
#13	10	13.67	5.00	15.67	9	12.92	3.08	16.00	19	26.59	8.08	34.67
#14	7	10.67	5.25	15.92	8	11.00	2.00	13.00	15	21.67	7.25	28.92
#15	10	22.00	5.00	27.00	9	11.08	2.42	13.50	19	33.08	7.42	40.50
#21	8	16.00	7.00	23.00	8	7.58	3.58	11.16	16	23.58	10.58	34.16
#26	8	16.00	7.00	23.00	10	16.00	3.75	19.75	18	32.00	10.75	42.75
#29	8	16.00	5.00	21.00	8	8.25	3.08	11.33	16	24.25	8.08	32.33
X for B	8.75	15.75	5.53	20.91	9.00	11.85	2.96	14.82	19.75	27.61	8.50	36.10
X for A & B combined	10.02	16.57	7.69	24.80	9.28	15.71	5.85	21.55	19.30	32.30	13.56	45.81

[a] All time is recorded in hours.

Assessment of Teachers' Use of the Inductive Method

To determine the extent to which the E teachers were using the inductive method (if, how and when) and to determine how the E and C teaching methods differed, it was necessary to observe the teacher's performance in the classroom. Two methods of in-class assessment were used--tape recordings and an observational rating scale.

Tape recordings. Over the two-year period of the study, one twenty minute lesson per month was tape recorded for each E and C teacher. An average of five taped lessons per teacher per year was made. The subject matter area taped was varied each month. However, only academic subjects were included because these were consistently taught by the special class teacher whereas other areas (e.g., music) were often taught by specialized teachers.

Two research assistants (graduate students in psychology) taped the teaching sessions without knowing which were E classes and which were C classes. Each used a portable tape recorded with one microphone. In addition to recording the lesson, they made observational notes about teaching aids, non-verbal transactions, and the social-emotional climate of the classroom. They integrated these observational notes with the tape recording during transcription. Typescripts were made from all tapes as a basis for analysis.

One year following the taping sessions, the two research assistants analyzed the typescripts. To insure anonymity of the E and C teachers, code numbers rather than teacher names were used.

The tapes were analyzed according to a classification system specially constructed to assess the teaching method. The classification system consists of two categories, one for teacher utterances and one for students. There are four primary teacher categories (structuring, reacting, information and routine) and five primary student categories (responding, evaluation, spontaneous remarks, routine, and no response). In addition, there are secondary teacher and student categories. A comprehensive description of this classification system, its abbreviations, and its use is presented in Appendix D. The categories which are most critical for the analysis of the teaching method are structuring for integrative responses (St-i), structuring for memory responses (St-m), requests for evaluations (Re-r), correcting responses (Re-c), re-structuring (Re-st), and information (I). A full description of this classification system can be found in Appendix D.

Each research assistant coded all of the typescripts independently. Then they compared their analyses. Disagreements were resolved by comparisons of rationales for decisions. Where agreement could not be reached, a third judge (the author of the classification system) was consulted.

To obtain a measure of inter-judge agreement, 100 units from each of twenty teachers typescripts were randomly selected. Coefficients of agreement (Smith and Meux, 1963) were obtained for each of the nine primary categories. These are shown in Table 9.

Table 9

Coefficients of Agreement for
Two Judges Using Tape Recording
Classification System

Category	R
Teacher:	
Structuring	.78
Reacting	.85
Information	.55
Routine	.76
Total teacher units	.74
Student:	
Response	.90
Evaluation	.40
Spontaneous	.63
Routine	.81
No Response	.92
Total student units	.73
Total units	.72

The coefficients seem to indicate a considerable amount of agreement between the judges except for the teacher's category of information and the student's category of evaluation. The relatively low reliability for the information category may be accounted for by the variability in the ways teachers presented information as it related to the other three teacher categories. The low reliability for the student category evaluation appears to be the result of confusion on the part of the judges during the first year of analysis. An analysis of the data on this category showed a coefficient of .22 at the end of the first year. This was remedied by retraining the analyzers to achieve a better understanding of this category and resulted in a coefficient of agreement of .57 for the second year of taping. On the basis of the over-all coefficients of agreement for teacher and student categories, it might be concluded that the classification system was effective in assessing the extent to which the teachers employed the teaching system.

Rating Scale. A second approach to analysis the extent of the teachers' use of the teaching material was employed. This approach exploited the observations of the two consultants augmented by those of four independent observers. For this purpose a five-point rating scale was developed to measure if, how well, and in what areas the teachers were using the teaching method. This rating scale is shown in AppendixE .

To determine the reliability of these ratings, reliability coefficients by intraclass correlation (Guilford, 1954) were obtained. For the fourteen items on the rating scale on the inductive method the reliability coefficients ranged from .54 to .84 with a mean of .68. From these results it seems that the independent observers and consultants were fairly consistent in their analyses of the inductive method.

Assessment of the Teachers' Use of the Social Learning Curriculum

During the first year of the study undergraduates from several local teacher colleges were employed to observe the teachers' use of the social learning curriculum. The rationale underlying the use of these "naive" observers was that their observations would be unhampered by experiences and preconceptions of what teachers should be doing and how. A check list in which the observers checked the activities, materials and groupings was employed. However, this was discontinued after several months since it provided no worthwhile data. To correct this, an observational scale was designed which made possible more elaborate descriptions of the activities and materials being used by the teacher. The inexperience of the observers led to extremes in data collecting so that the observations were either too meager or too elaborate. These data defied analysis and it was, therefore, necessary to discontinue the services of the "naive observers."

A rating scale (shown in Appendix E) was developed to assess the extent to which the social learning curriculum was used. The rating scale incorporated the following variables which could be rated on a five-point scale: ability groupings, sequence of learnings, instructional materials, social learning, curriculum emphasis, and learning atmosphere. This scale was used by the two consultants augmented by the four independent observers.

The reliability coefficients by intraclass correlation (Guilford, 1954) for items on this scale ranged from .07 to .79 with a median of .66. Two categories, one on ability grouping and one on instructional materials, had reliability coefficients of .32 and .07 respectively. The reliability of these two items was questionable and interpretation of data in these areas should be cautious. However, it should be noted that the highest reliability coefficients were obtained for the social studies items (i.e., from .66 to .79). The four areas assessed in the social studies items are the most critical for the analysis of the social learning curriculum.

In addition to evaluating the extent to which the curriculum was used, the amount of time devoted to instruction was measured on a time sampling basis. Without the teachers' knowledge, instructional time was measured with stop watches. When the transactions had a non-teaching function (e.g., preparing for lunch or disciplining), the stop watch was stopped.

Assessment by the Independent Observers

To evaluate whether the E and C teachers were using the inductive method and social learning curriculum, four independent observers (graduate students in special education) were employed. Although the consultants were able to make such evaluations and had done so for two years, their evaluations were confined to the E classes only. The experience with the undergraduate students as observers indicated that individuals with some skills in observational techniques and educational experience would be required.

Over a two-month period, the four observers were given an orientation to the project by the two consultants. Initially, one three-hour training meeting on the nature of the inductive method and social learning curriculum was held. Then a period of supervised observation, four one-half days during which the observer and each consultant observed a teacher together, was given. Observations and ratings were compared and refined as part of the training. Following this the observers worked independently.

The observers made their observations during the last six months of the study. They spent one-half of the school day with each teacher. Observations were rotated so that each teacher was seen by as many of the four as possible. Both the E group and the C group received a mean of four visits from the independent observers with a range of three to five.

During their half-day visits the observers recorded in log fashion the groupings, activities, materials and methods employed by the teacher. The observers' summary sheet is in Appendix E.

When making the final teacher ratings on the use of the curriculum and method, both the consultants and independent observers reviewed their entire accumulation of all visitation anecdotal logs, notes, and observer summary sheets and ratings. This varied array of data provided comprehensive information to facilitate an accurate judgement of proficiency.

Assessment of E Teacher Change

A rating scale was designed to measure the amount of positive or negative change made by the teachers over the two years of this study. This scale assesses the teachers' ability to use the inductive method and social learning curriculum, to manage the classroom at the beginning and end of the study, and their receptivity to consultation help. This five-point rating scale is shown in Appendix E.

This scale was used only with the E teachers by the one consultant who worked with the teachers over the two-year period. Thus, reliability data were not obtained.

Assessment of Student Performance

One way of assessing teacher efficacy is by measuring their students' progress in intelligence, achievement, personality development, and cognitive style. In this study, formal tests were applied in each of these areas. The complete list of tests and time sequence of administration are shown in Table 10. Pre-testing with tests of intelligence, achievement, and personality was done early during the second year of the study. During the first part of the third year,

Table 10

Tests Administered
to E and C Students

Test	Pre-testing First part of second year	Pre-testing First part of third year	Post-testing Last part of third year
Intelligence:			
Binet or WISC	X		
P.P.V.T.	X		X
Achievement:			
M.A.T.	X		X
Lee-Clark	X		X
TOBI	X		X
Personality:			
Probability Learning		X	
Response Set		X	
Cognitive Style:			
Torrance Divergent Thinking Tests		X	

measures of personality and cognitive style were administered. Post-testing was done in the last part of the third year.

All tests except the achievement tests were administered on an individual basis. Graduate students in special education and psychology administered all tests.

Intelligence Tests.

Three tests of intelligence were used: The Stanford-Binet Intelligence Scale, Form L-M (Terman and Merrill, 1960), the Wechsler Intelligence Scale for Children or the WISC (Wechsler, 1949), and the Peabody Picture Vocabulary Test or the P.P.V.T. (Dunn, 1959). The P.P.V.T. was administered to all children. The Stanford-Binet was given to a majority of the children. In cases where the WISC was the only test score accepted by the school district, this test was administered. In other cases, Binet or WISC tests administered less than two years earlier by a certified district psychologist, were accepted as data for analysis of intellectual performance.

Achievement Tests.

The word knowledge, word discrimination, reading, arithmetic sub-tests of the Metropolitan Achievement Test, Primary I, or the M.A.T. (Durost, Bixler, Hildreth, Lund and Wrightstone, 1960) were given to all children. Ceilings were established for all sub-tests as follows: a raw score higher than 43 on reading, 32 on word discrimination and word knowledge, or 60 on arithmetic. Children achieving these scores were given M.A.T., Primary II. Children obtaining a raw score of fifteen or lower on the reading sub-test of Primary I, were given the Lee-Clark Readiness Test, primer level, (Lee and Clark, 1958).

To measure the amount of social learning, the Test of Basic Information or the TOBI (Moss, 1962) was given. No norms for this test were available; thus raw scores had to be used.

Personality Tests.

Previous research (Hahn, 1965; Goldstein, Moss and Jordan, 1965), has shown that the two aspects of personality -- success expectancy and response to frustration -- are related to how mentally retarded children react to classroom functions.

It has been shown that children's performance on a three-choice task in which one of the choices is partially reinforced and the other two are not reinforced is influenced by the degree of success they expect to have in this task. Children who expect less than 100% reinforcement tend to choose the partially reinforced choice more than children who expect and seek 100% reinforcement (Weir, 1964). Partial confirmation for the hypothesis that mentally retarded children in regular classes expect less success than such children in special classes was reported by Hahn (1966). Success expectancy in this study as in previous studies was measured by the probability learning task.

Appendix F contains details of the probability learning task.

A response set questionnaire was designed to determine the effects of frustration on the child's ability to perform. This questionnaire is shown in Appendix E. The questionnaire consisted of 30 items categorized as follows: the first ten questions which could be easily answered (i.e., they could be answered correctly by primary level mentally retarded children), the second ten which were impossible for a mentally retarded child of this level to answer correctly (e.g., "Why is grass green?", and the final ten which were easy to answer. It was assumed that ten difficult questions represent a frustrating experience which would diffuse to the final easy questions. Thus, it was anticipated that children negatively affected by the ten frustrating questions would make more incorrect responses or give no responses to the final ten questions than a child who had not been so affected. The score used was the number of correct responses to the final ten questions.

The response set questionnaire was piloted with 100 mentally retarded children. The original questionnaire contained 60 questions. Those retained were either answered correctly by all children or incorrectly by all children. The vocabulary used in the questions was controlled so that the children knew the meanings of the words in all questions.

Cognitive Style Tests.

Tisdall (1962) found that some mentally retarded children in special classes where the Illinois Plan and an inductive method were used were superior on verbal tests of divergent thinking to such children in regular classes. Thus, cognitive style or divergent thinking was measured in this study.[a]

The following three verbal tests of divergent thinking (Torrance, Yamamoto, Schemetski, Pelamuthu, and Luther, 1960) were used: the Mother Hubbard Problem, Unusual Uses of a Tin Can, Product Improvement of a Toy Dog. All three tests were scored for fluency (the number of relevant responses) and originality (the unusualness of a response). The latter two tests were also scored for flexibility (the number of thought category shifts). A thorough description of these tests, the methods of administration, and scoring can be found in Tisdall's study (1962).

Three judges were trained to score these tests. The percent of inter-judge agreement for the three tests of 75 project children is shown in Table 11. The range of total agreement is from 71% to 83% with an over-all average of 78%. There were no cases of total disagreement.

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[a] Guilford, 1956, defines divergent thinking as the generation of information from given information where the emphasis is upon variety and quantity of output from the same source.

Table 11

Percent of Agreement for Three Judges on Divergent Thinking Tests

	Total Agreement (3 of 3 judges concur)	Partial Agreement (2 of 3 judges concur)	No Agreement (None of judges concurred)
Mother Hubbard			
Fluency	80	20	0
originality	71	29	0
Product Improvement			
Fluency	73	27	0
Flexibility	82	18	0
Originality	75	25	0
Unusual Uses			
Fluency	74	26	0
Flexibility	83	17	0
Originality	83	17	0
Mean			
Fluency	76	24	0
Flexibility	82	18	0
Originality	76	24	0
Average	78	22	0

CHAPTER III

RESULTS

The data in this chapter have been analyzed to test the hypotheses evolving out of the assumptions that teachers will use the curriculum and teaching method central to their preparation in the ordinary course of instruction in their classroom.

Teachers' Use of the Social Learning Curriculum

Hypothesis I. The E teachers will use the social learning curriculum in their classrooms more extensively than the C teachers. The mean ratings on the five point curriculum rating scale for the E and C groups are shown in Table 12. The first item on this table measures the competence of the teacher to form groups appropriately and efficiently. The data showed that the E teachers achieved mean ratings ranging from 3.53 to 3.88 (i.e., from "semi-appropriate" to "usually appropriate") while the C teachers' rating ranged from 3.33 to 4.15. It should be noted that the rating of 4.15 was based on an N of 2 and should not be viewed as typical of the C teachers. There were no significant differences between the E and C groups on any of the ratings.

The data on Item 2 ratings on the ability to sequence learning appropriately, ranged from 3.23 to 3.84 for the E group and 3.37 to

3.75 for the C group. Both groups can be described as generally providing structured learnings. No significant "t" values were found on any of these comparisons.

Item 3 measures the teachers' use of instructional materials. The E teachers achieved ratings ranging from 3.55 to 3.88 while the C teachers ranged from 3.37 to 4.10. The E teachers received significantly higher ratings than the C teachers on the appropriateness of the materials they used in arithmetic (t = 2.23; p .05). On the other subject matter areas and the over-all rating, no significant differences were found.

Item 4 provided ratings of the teacher's competence to manage important aspects in social learning. These data show that the E teachers were significantly superior in their ability to ascertain their children's needs in the areas of persisting life problems (t = 2.25; p .05) as well as in their ability to provide learnings consonant with the children's needs (t = 2.26; p .05). It is worth noting that there were no significant differences between the E and C teachers' ratings on equally important aspects of the social learning curriculum, namely, the provision of learnings in a problem solving context and the correlation of various subjects with social learning; however, there was a definite trend for the E teachers to have higher ratings in these two areas.

Table 12

Ratings for E and C Teachers on Curriculum Rating Scale

	E Group			C Group			
Item	$\bar{X}$	S.D.	N	$\bar{X}$	S.D.	N	t
1. Ability groupings							
a. Reading	3.88	.62	17	3.58	.44	7	1.13
b. Writing	3.61	.84	16	4.15	1.20	2	-.84
c. Spelling	3.53	.81	15	3.83	1.04	3	-.56
d. Arithmetic	3.76	.78	17	3.68	.41	7	.23
e. Social Studies	3.65	.88	17	3.47	.45	6	.48
f. Health and Science	3.73	.66	13	3.33	1.04	3	.85
g. Over-all Academics	3.68	.42	17	3.43	.46	7	1.30
2. Sequential learnings							
a. Reading	3.84	.50	17	3.46	.92	7	1.33
b. Writing	3.23	1.05	17	3.67	.58	3	-.68
c. Spelling	3.53	.64	15	3.75	.35	2	-.46
d. Arithmetic	3.73	.80	17	3.38	.42	6	1.02
e. Social Studies	3.35	.92	17	3.70	.45	5	-.85
f. Health and Science	3.67	.75	12	3.37	1.25	4	.57
g. Over-all Academics	3.61	.52	17	3.56	.36	7	.25
3. Materials							
a. Language Arts	3.88	.50	17	3.48	.34	7	1.86
b. Arithmetic	3.89	.55	17	3.37	.40	7	2.23[a]
c. Social Studies	3.55	.79	17	4.00	.36	5	-1.21
d. Health and Science	3.75	.84	12	4.10	.85	3	-.64
e. Over-all Academics	3.71	.44	17	3.54	.63	7	1.75

Table 12 (cont.)

Ratings for E and C Teachers
on Curriculum Rating Scale

	E Group			C Group			
Item	$\bar{X}$	S.D.	N	$\bar{X}$	S.D.	N	t
4. Social learning							
a. Assess Life Problems	3.11	.97	17	2.18	.77	7	2.25[a]
b. Meet Life Problems	2.99	.74	17	2.14	1.03	7	2.26[a]
c. Problem Solving context	2.75	.93	17	2.36	1.14	7	.48
d. Correlation of Subjects	2.78	.94	17	2.57	.98	7	.48
5. Curriculum stress							
a. Academic	3.95	.43	17	3.96	.44	7	-.02
b. Social Learning	3.01	.67	17	2.63	.61	7	1.30
6. Learning atmosphere							
a. Language Arts	2.83	.61	17	2.69	.83	7	.49
b. Arithmetic	3.08	.72	17	2.36	.65	7	2.29[a]
c. Social Studies	2.86	.93	17	2.80	1.15	5	.13
d. Health and Science	3.13	1.05	11	2.77	.93	3	.55
e. Over-all	3.09	.63	17	2.69	1.17	7	1.12

[a] Significant at .05 level with two-tailed test.

Item 5 assesses the extent to which the teachers stress social learning as compared with academic learning. The table shows that the E teachers stressed social learning more than the C teachers, but this difference was not significant.

In Item 6 the learning atmosphere is evaluated. The ratings for the E teachers ranged from 2.83 to 3.13 and for the C teachers from 2.36 to 2.80. Thus, the learning atmosphere in both groups can be described as one in which the students were somewhat dependent on the teacher. The only significant difference between the E and C groups was in the learning atmosphere in arithmetic where the E students were less dependent on their teachers than were the C students ($t = 2.29$; p .05). However, in all other subject matter areas there was a trend for the E teachers to create an atmosphere of greater student independence.

In summary, the rating scale measuring the use of the curriculum shows that there was considerable similarity between the E and C teachers except in some elements of social learning and arithmetic. In arithmetic the E teachers used more appropriate materials and generated greater independence in their students than did the C teachers. In social learning the E teachers assessed and met the life problems of their students more than the C teachers, and there was a trend for the E teachers to provide social learnings in a problem solving context and to correlate social learning with other subjects more than the C teachers.

Although most of the E teachers used some parts of the social learning curriculum, it must be concluded that the E group as a whole did not use the social learning curriculum, and thus Hypothesis I can only be accepted with reservations.

Independent analyses of the results of the consultant rating scale on the use of the social learning curriculum by the consultants and the measurement supervisor together with their subjective evaluations based on their observations in the classroom indicated that five of the seventeen E teachers and two of the seven C teachers used the social learning curriculum with a noteworthy degree of consistency and effectiveness. There was 100% agreement for these three observers. Thus, the qualitative and quantitative analyses indicated that while the E teachers as a total group were not remarkable in their use of the curriculum, there was a far greater incidence of use than was found among the C teachers.

The Teachers' Use of the Inductive Method

Hypothesis II. The E teachers will use the inductive teaching method in their classrooms more extensively than the C teachers. To measure the teachers' use of the inductive method, the rating scale on the inductive method and the tape recordings were analyzed.

Rating Scale.

The mean ratings for the E and C teachers on the five point inductive method rating scale are presented in Table 13. On the type of teaching method used most frequently in academic subjects, the E group's mean rating ranged from 3.16 to 3.60 (i.e., from eclectic teaching with a trend toward inductive teaching). The C groups had rating from 2.50 to 3.67 (i.e., from rote toward eclectic teaching). It should be noted that the only subject matter in which the C group had a mean rating above 3.00 was in health and science and this was based on an N of 3. Thus, a trend for the E teachers to be more inductive than the C teachers was found for academic teaching. The only significant difference between the E and C group was in social learning, the foundation of the curriculum, and here the E teachers tended to use the inductive method while the C teachers tended to use a rote method.

The mean ratings on the teaching method used by the E teachers in non-academic subjects ranged from 3.00 to 3.14 which indicates that they were eclectic in their teaching methods. The C teachers received ratings from 2.00 to 3.00. They seemed to use a more rote approach than did the E teachers; however, the small N necessitates a cautious interpretation. The E teachers used a significantly less rote and more eclectic style than did the C teachers in physical education ($t = 3.10$; p .02) and in the over-all rating of non-academic subjects ($t = 3.07$; p .02). Since the N's of the C group

Table 13

Ratings for E and C Teachers on
Inductive Method Rating Scale

Item	E Group			C Group			
	$\bar{X}$	S.D.	N	$\bar{X}$	S.D.	N	t
1. Type of teaching method used -- academics							
(a) Language Arts	3.18	.59	17	2.86	.60	7	1.25
(b) Arithmetic	3.17	.64	17	2.70	1.06	7	1.35
(c) Social Learning	3.60	.80	17	2.50	.87	5	2.67[a]
(d) Health and/or Science	3.57	.70	11	3.67	1.53	3	-.16
(e) Over-all Academics	3.16	.62	17	2.74	.93	7	1.31
2. Type of teaching method used -- non-academics							
(a) Physical Education	3.11	.33	9	2.00	1.00	3	3.10[a]
(b) Music	3.06	.53	9	3.00	0	2	1.43
(c) Art	3.00	.07	10	3.00	0	1	.00
(d) Over-all Non-academics	3.14	.50	11	2.00	0	2	3.07[a]
3. Type of teaching method used -- management	3.11	.56	17	2.68	.61	7	1.65
4. Type of teaching method used -- all areas	3.21	.58	17	2.86	.70	7	1.30
5. Appropriateness and correctness of method -- academics							
(a) Language Arts	3.85	.38	13	3.50	.58	4	1.41
(b) Arithmetic	4.17	.40	11	3.95	.10	4	1.06
(c) Social Studies	4.12	.55	13	5.00	0	1	-1.56
(d) Health & Science	4.12	.64	8	5.00	0	2	-1.84
(e) Over-all Academics	4.02	.45	11	4.20	.72	3	-.55

Table 13 (cont.)

Ratings for E and C Teachers on
Inductive Method Rating Scale

	E Group			C Group			
Item	$\bar{X}$	S.D.	N	$\bar{X}$	S.D.	N	t
6. Appropriateness and correctness of method -- non-academics							
(a) Physical Education	3.00	0	1	0	0	0	0
(b) Music	3.50	.58	4	0	0	0	0
(c) Art	3.83	.76	3	0	0	0	0
(d) Over-all non-academics	3.50	.58	4	0	0	0	0
7. Appropriateness and correctness of method management	4.10	.71	8	4.50	0	2	-.76
8. Appropriateness and correctness of method -- all areas	4.06	.34	9	4.00	.71	2	.18
9. Structure of stimuli	3.81	.52	17	3.48	.90	7	1.13
10. Relevance of cues							
(a) Vocabulary	3.79	.42	17	3.40	.65	7	1.75
(b) Experience	3.82	.56	17	3.21	.63	7	2.31[b]
11. Appropriateness of reinforcement	3.75	.65	17	3.54	.80	7	.66
12. Teacher's response to incorrect response							
(a) Evaluation	2.97	.58	17	2.51	.81	7	1.58
(b) Restructures	2.87	.80	17	2.58	.94	7	.75
(c) Rephrases	3.62	.50	17	3.10	.73	7	2.00[a]
13. Discovery of generalization	2.78	.62	17	2.26	.68	7	1.84
14. Summarizing							
(a) Pupil	2.30	.49	17	2.06	.60	7	1.06
(b) Teacher	3.08	.54	17	2.84	.62	7	.92

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[a] Significant at .02 level with two tailed test.

[b] Significant at .05 level with two tailed test.

were so small, these data do not merit interpretation. Futhermore, none of the C teachers was rated as using the inductive method.

The mean rating for the type of teaching method used for management by the E group was 3.11 and 2.68 for the C group. Although the C teachers tended to be more rote oriented, this difference was not significant.

The mean rating for the type of teaching method used for all areas combined was 3.21 for the E group and 2.86 for the C group. This trend for the E group to be less rote oriented than the C group was not significant. However, the consistent trend for the E teachers to be more inductive than the C teachers regardless of subject matter is worth noting.

Those teachers who used the inductive method were then rated on the appropriateness and correctness of application. The mean ratings for the appropriateness and correctness in the use of the inductive method in the academic areas ranged from 3.85 to 4.17 for E group, indicating that the method was generally used appropriately and correctly.

The E teachers' ratings on the appropriateness and correctness of their use of the inductive method in non-academic ranged from 3.00 to 3.83 with a mean of 3.50 which represents a rating of usually appropriate. C teachers did not qualify for ratings on this aspect because they did not use the inductive method to criterion (see Appendix E).

The E teachers obtained an average rating of 4.10 and the C teachers 4.50 on the appropriateness and correctness of their use of the inductive method in management areas. This represents a rating of almost always being appropriate. The N for the C group was two; thus, this average rating must be viewed cautiously. The difference of the E and C groups was not significant.

The mean ratings on the appropriateness and correctness of the use of the inductive method for all areas combined was 4.06 for the E group and 4.10 for the C group. The rating for the C group was based on an N of 2. The difference between the two groups was not significant. From these data it can be concluded that when the E and C teachers used the inductive method they usually used it appropriately and correctly; however, the E teacher used the method more than the C teachers.

On the degree to which the teachers organized the stimuli in the teaching situation, the E group received a mean rating of 3.81 and the C group 3.48. This difference was not significant and it can be concluded that both groups usually organized the stimuli in the teaching situation and did so to comparable degrees.

In terms of the relevance of the teachers' cues to the children's vocabulary levels, the E teachers received a mean rating of 3.79 and the C teachers 3.40. Although there was a tendency for the E teachers to select cues at a more appropriate vocabulary level than the C teachers, this difference was not statistically significant. The E teachers received a mean rating of 3.82 on the relevance of the cues selected in relation to the children's experiential background, while the C teachers obtained a mean rating of 3.21. This difference was statistically significant ($\underline{t} = 2.31$; $\underline{p}$ .05). Thus, the E teachers were more accurate in their selection of cues consoant with their student's experiential background.

The E teachers were rated 3.75 on the appropriateness of the reinforcement they gave and the C teachers 3.54. This difference was not significant. Thus, both groups tended to give reinforcement which was usually appropriate to the situation.

On the three items involving the teachers' responses to incorrect student responses there was a trend for the E teachers to obtain higher rating than the C teachers. The E teachers obtained a rating of 2.97 on their requests for children to evaluate their correct responses and the C teachers 2.51. This indicates that the E teachers tended to involve the children in the evaluation of their responses more than the C teachers; however, this trend was not statistically significant. On restructuring the teaching situation following an erroneous student response, the E teachers obtained a mean rating of 2.87 and the C teachers 2.58. Although the E teachers' rating was higher, this was not significantly so. The E group obtained a mean rating of 3.62 on rephrasing questions after erroneous responses and the C group 3.10. This difference was statistically significant ($\underline{t} = 2.00$; $\underline{p}$ .05).

On the item assessing whether the teachers provided the opportunity for the children to discover the generalization, the E group received a mean rating 2.78 and the C group 2.26. Although there was a trend favoring the E teachers to provide more opportunities for the discovery of generalization, this was not statistically significant. Both groups rarely provided such opportunities for discovery. This was the most important element of the induction method.

Insofar as closing a teaching sequence was concerned, the E and C teachers rarely asked the pupils to summarize. They received ratings of 2.30 and 2.06, respectively. This difference was not found to be significant. When the teacher took it upon himself to close the sequence by summarizing, the E group received a rating of 3.08 and the C group 2.84, which also was not significant. When sequence were purposefully closed, this was more often done by the teachers in the E group.

In summary, the E teachers obtained significantly higher ratings than the C teachers on five of the 32 items on the rating scale on the inductive method. In 28 comparisons, the E teachers were superior in 21, although the E group did not use the inductive method consistently nor completely, they did use it more than the C group.

Tape Recordings

The results of the analysis of the tape recordings are presented in Tables 14, 15, 16, and 17. If the E teachers were using the inductive method, they should have used significantly more structuring-integrative, reacting-evaluation, reacting-restructuring statements. They should have used fewer structuring-memory, reacting-correcting, and information statements. Also, the E students should have given significantly more responses of the integrative type and evaluations than did the C students. The E students should have given fewer responses of the memory type.

The percent of E and C teacher statements for language arts and arithmetic is presented in Table 14. None of the differences was significant. However, there was a trend for the C teachers to have more structuring-memory statements than the E teachers in both subjects. The E teachers had more structuring-integrative statements in arithmetic. In both subjects the E teachers restructured their students after incorrect responses more than the C teachers. This trend support the results on this item from the consultant rating scale.

In Table 15 the percent of E and C teacher statements in the various categories for the social learning is shown. There were no

Table 14

Per Cent of E and C Teacher Statements in Tape Recording Categories -- Language Arts and Arithmetic

Category	Language Arts					Arithmetic				
	E Group		C Group		t	E Group		C Group		t
	$\overline{X}$	S.D.	$\overline{X}$	S.D.		$\overline{X}$	S.D.	$\overline{X}$	S.D.	
Structuring memory	21.53	7.42	24.86	4.30	-1.10	19.00	7.25	25.29	7.82	-1.87
Structuring integrative	2.76	1.81	2.71	1.25	.06	5.69	4.78	2.86	1.95	1.50
Structuring total	23.94	6.98	27.14	4.88	1.09	24.50	6.34	27.71	6.18	-1.01
Reacting-positive reinforcement	15.76	4.83	17.43	4.69	-.77	17.50	5.03	19.86	5.70	-1.00
Reacting-negative reinforcement	3.94	2.01	3.71	2.99	.22	2.94	1.80	3.14	1.95	-.24
Reacting-neutral reinforcement	11.41	4.99	13.14	5.37	-.75	12.94	4.05	14.43	5.44	-.67
Reacting-evaluation	2.53	1.37	2.14	1.46	.61	3.19	2.32	3.00	1.41	.20
Reacting-correcting	2.76	2.11	3.14	2.27	-.39	1.31	.87	1.14	.38	.47
Reacting-restructuring	31.82	6.42	27.29	8.48	1.43	30.81	7.60	26.14	2.54	1.40
Reacting - total	67.94	7.46	65.57	5.56	.75	67.38	7.95	66.14	8.68	.34
Information	3.82	2.29	4.57	1.81	-.76	3.31	1.74	2.57	1.40	.99
Routine-management	3.94	2.24	2.43	1.26	1.79	4.31	2.27	2.86	2.79	1.32
Routine-discipline	1.76	1.60	2.14	4.38	-.31	1.81	1.05	2.29	1.97	-.62
Routine-total	5.24	2.76	4.29	5.28	.58	5.56	2.47	4.86	4.30	.50

Table 15

Per Cent of E and C Teacher Statements in Tape Recording
Categories -- Social Studies and all Subject Matters Combined

Category	Social Learning					All Subject Matters Combined				
	E Group		C Group		t	E Group		C Group		t
	$\overline{X}$	S.D.	$\overline{X}$	S.D.		$\overline{X}$	S.D.	$\overline{X}$	S.D.	
Structuring-memory	19.31	7.32	18.57	4.72	.22	19.47	5.06	24.43	4.96	-2.19[a]
Structuring-integrative	3.89	3.34	3.57	3.26	.21	4.06	2.19	3.29	1.49	.84
Structuring-total	23.19	7.04	22.00	5.77	.39	23.71	4.06	27.14	4.60	-1.81
Reacting-positive reinforcement	15.63	15.40	17.86	6.94	-.88	16.06	3.61	18.00	4.76	-1.07
Reacting-negative reinforcement	3.38	3.30	1.43	1.27	1.50	3.53	1.54	3.29	1.98	.32
Reacting-neutral reinforcement	15.50	5.22	15.43	8.92	.02	13.47	3.94	14.43	5.43	-.48
Reacting-evaluation	1.69	1.58	1.43	.79	1.31	2.88	1.45	2.57	1.27	.49
Reacting-correcting	1.88	1.31	2.29	1.49	-.65	2.29	1.16	2.00	1.00	.58
Reacting-restructuring	29.81	7.99	28.71	8.10	.30	30.59	4.96	26.43	5.32	1.83
Reacting-total	67.25	7.36	66.71	5.53	1.11	69.82	4.73	65.29	5.53	1.13
Information	5.38	3.24	6.14	3.98	-.48	4.59	1.70	4.00	1.63	.79
Routine-management	2.94	2.72	2.86	2.03	.07	3.88	2.12	2.71	1.60	1.31
Routine-discipline	1.94	1.91	2.57	4.20	-.50	1.94	1.20	2.29	2.98	-.43
Routine-total	4.56	3.33	5.29	5.71	-.38	5.24	2.36	4.11	-1.50	.38

[a] Significant at .05 level with two-tailed test.

Table 16

Per Cent of E and C Student Statements in Tape Recording Categories -- Language Arts and Arithmetic

Category	Language Arts					Arithmetic				
	E Group		C Group		t	E Group		C Group		t
	$\bar{X}$	S.D.	$\bar{X}$	S.D.		$\bar{X}$	S.D.	$\bar{X}$	S.D.	
Response-memory	60.12	8.99	60.00	18.79	.02	55.13	14.62	65.29	13.85	-2.14[a]
Correct	47.06	8.72	49.86	16.23	-.55	44.81	13.51	55.86	13.61	-1.80
Incorrect	13.24	4.25	10.29	5.65	1.40	10.56	7.61	9.86	2.19	.24
Response-integrative	5.65	4.48	6.57	4.03	-.46	13.00	10.50	10.71	13.56	.44
Correct	4.29	3.71	5.29	3.45	-.61	9.75	8.28	8.57	10.40	.29
Incorrect	1.41	1.54	1.57	.53	-.26	3.19	3.43	2.29	3.55	.57
Response-indeterminate	11.94	4.63	14.86	12.25	-.86	8.75	3.97	8.71	3.59	.02
Response-total	77.18	6.19	81.86	9.39	-1.34	76.44	7.97	84.14	9.68	-2.00
Correct	50.65	8.07	55.00	17.41	-.84	53.44	9.04	64.14	11.81	2.38[a]
Incorrect	14.88	3.89	11.71	5.68	1.57	13.56	7.69	12.00	2.31	.52
Evaluation	2.94	1.87	2.43	2.37	60	3.25	2.21	4.29	2.29	-1.03
Spontaneous-question	1.94	1.09	2.14	1.46	-.37	2.44	1.26	1.29	1.80	1.08
Spontaneous-statement	5.06	3.93	3.86	4.26	.65	8.63	7.74	5.14	5.30	1.26
Spontaneous-total	7.00	4.82	5.43	5.47	.69	10.56	8.26	6.14	6.20	.65
Routine	3.76	2.86	2.14	3.13	1.22	3.88	2.60	3.00	3.75	.84
No Response	7.00	3.61	7.57	4.99	-.31	5.00	3.86	3.71	1.60	1.46

[a] Significant at .05 level with two-tailed test.

Table 17

Per Cent of E and C Student Statements in Tape Recording
Categories -- Social Studies and all Subjects Combined

Category	Social Learning					All Subject Matters Combined				
	E Group		C Group		t	E Group		C Group		t
	$\bar{X}$	S.D.	$\bar{X}$	S.D.		$\bar{X}$	S.D.	$\bar{X}$	S.D.	
Response-memory	51.75	10.48	50.43	24.64	.18	54.71	7.28	59.71	15.79	-1.08
Correct	44.13	10.39	44.57	25.45	-.06	44.88	7.66	50.71	15.39	-1.25
Incorrect	7.44	4.08	5.86	3.39	.89	10.53	2.83	9.43	2.64	.88
Response-integrative	11.81	8.29	10.86	9.46	.24	9.44	5.98	10.00	5.80	-.02
Correct	9.75	7.01	10.14	8.41	.11	7.88	4.97	8.43	4.79	-.24
Incorrect	2.31	1.92	.71	1.11	2.04	2.35	1.66	2.14	1.34	.30
Response-indeterminate	14.25	4.97	14.00	6.64	.10	12.18	3.17	13.00	7.02	-.40
Response-total	77.56	7.34	75.29	18.03	.43	74.12	10.60	82.29	9.76	-1.93
Correct	53.75	8.93	54.71	24.52	-.14	49.82	10.37	58.57	15.94	-1.60
Incorrect	9.63	3.89	6.57	3.46	1.78	12.71	3.40	11.29	2.93	.97
Evaluation	1.69	1.49	2.71	2.43	-1.24	2.88	1.27	3.29	2.14	-.59
Spontaneous-question	1.50	1.41	.43	.79	1.88	2.00	.71	1.29	1.38	1.88
Spontaneous-statement	8.88	5.56	7.86	11.52	.35	7.71	5.37	5.29	5.09	1.63
Spontaneous-total	10.31	6.80	8.43	12.24	.47	10.41	5.84	6.43	6.37	1.48
Routine	3.38	4.63	3.43	3.31	-.02	3.71	2.57	2.57	3.10	.93
No response	4.81	2.70	6.00	2.94	-.94	5.65	2.71	5.29	2.22	.31

significant difference between the groups on any categories. Also in Table 15 the results for all subject matters combined are shown. As predicted, the E group obtained significantly less structuring for memory statements than the C group ($t = -2.19$; p .05). There was a trend, which was not significant, for the E teachers to re-structure more than the C teachers.

In Table 16 the percent of E and C students' statements in each of the categories of the classification system for language arts and arithmetic is shown. There was no significant difference between the groups in language arts. In arithmetic the E students gave significantly more structuring for memory responses. There was a trend for the C students to give more total responses, and there was a significant difference between the number of total correct responses in favor of the C group ($t = -2.38$; p .05).

In Table 17 the analysis of student utterances in social studies and for all subject matters combined is shown. No significant differences were found between the groups in social learning. The significant differences found in arithmetic were found in the form of trends for all subject matters combined.

In summary, the results of the tape recording seemed to indicate that the C teachers were somewhat more rote in their teaching method than the E teachers. Thus the C students gave more rote responses.

More of the C students' responses were correct because rote responses are probably easier than integrative responses.

The results of the consultant rating scale and the tape recordings indicate that most of the E teachers used some aspect of the inductive method. Thus, Hypothesis II was supported but with the reservations consistent with the nature of the data.

Integration of Observations

The results of the rating scale indicated that while not all of the E teachers used the method consistently or completely, they did use it more than did the C teachers. On the other hand, the results of the tapes showed no noteworthy differences between the E and C teachers or children. From the subject assessment by the consultants and the measurement supervisor it was found that seven of the seventeen E teachers and one of the seven C teachers used the method. From these three sources of data it might be concluded that some of the E teachers used the method and some did not, while practically none of the C teachers used it. When the E group was considered as a whole, the teachers who did not use the method neutralized the effects of those who did use it. It is of importance to note that when the inductive method was used, it was used by the E teachers and not the C teachers.

Teacher Change Rating Scale

Since the instrumentation of this study was developed during the course of the study, there was no opportunity for pre-testing the teachers on many of the factors fundamental to the hypotheses. A teacher change rating scale was constructed to accomodate the observations of the consultants regarding the degree of change of the teachers over the term of the study. The data derived from this scale are shown in Table 18. At the start of the study over 80% of the teachers were either not using the inductive method or using it inappropriately and were rated as needing considerable help toward making a change. By the end of the study 69% of those needing change made some positive change, while 31% made either no change or changed negatively. However, by the end of the study 59% of the teachers were still in need of guidance on use of the method. Thus, it seems that most of the E teachers needed much guidance in the use of the inductive method at the start of the study. During the course of the study they made considerable progress in learning to use the inductive method; however, this progress was not sufficient and at the end of the study 88% were rated as needing help in instituting the social learning curriculum. Seventy-five percent made positive change; however, at the end of the study 52% were still in need of guidance.

These ratings for the social learning curriculum are similar to those for the inductive method.

Only 42% of the E teachers were rated as needing improvement in their ability to handle classroom management problems at the beginning of the study. This is a smaller percentage than the ratings for the inductive method and curriculum. It is clear that these teachers had less difficulty with management than with pedagogic problems. Of the 42% who needed change, 67% made positive change. At the end of the study 77% did not need the consultant's guidance in handling management problems. Thus the E teachers, as a whole, were better able to handle management problems, made considerable progress, and showed a great deal of independence in this area at the end of the study.

Seventy-six percent of the E teachers implemented appropriately the consultant's recommendations while twelve percent paid no attention to them and another twelve percent misinterpreted them.

As the start of the study 77% of the E teachers were realistic about their need for help and requested assistance from the consultants. Six percent who needed help did not ask for assistance, and eighteen percent asked for more help than their situation required. At the end of the study, 88% of the teachers asking for help were rated as realistic about their needs for help.

Table 18

Distribution of Ratings for E Teachers
on Teacher Change Rating Scale (N=17)

Item	Percent of Teachers Receiving Each Rating[a]				
	Rating 1	Rating 2	Rating 3	Rating 4	Rating 5
1. Change in use of inductive method needed.	18	35	29	12	6
2. Change in use of inductive method made.	6	0	25	50	19
3. Independence in use of inductive method at end of study	12	18	29	18	24
4. Change in use of curriculum needed	18	29	41	6	6
5. Change in use of curriculum made.	6	6	13	44	31
6. Independence in use of curriculum at end of study.	24	12	18	24	24
7. Change in use of management needed.	12	12	18	29	29
8. Change in use of management made.	0	8	25	50	17
9. Independence in management at end of study.	0	12	12	12	65
10. Implements consultant's recommendations	6	6	12	41	35
11-a. Teacher's requests for consultant's assistance at start of study.	12	6	6	65	12
11-b. Teacher's requests for consultant's assistance at end of study.	6	6	0	53	35
12-a. Teacher receptivity to consultant -- at start of study.	6	18	6	47	24
12-b. Teacher receptivity to consultant -- at end of study.	6	6	18	24	47

[a] Rating of 5 is high and 1 is low.

At the start of the study 24% of the teachers were openly receptive to the consultant's recommendations while 47% were cautiously receptive. By the end of the study these proportions were reversed. At the beginning of the study six percent were indifferent to recommendations, six percent skeptical, and eighteen percent antagonistic. By the end of the study, among those with negative attitudes, the shift was toward acceptance of the consultant.

To determine whether attendance at training sessions was related to the degree of teacher change over the course of the study, Pearson Product Moment Coefficients of Correlation for each item of the teacher change rating scale and attendance rate were obtained. The correlations ranged from -.33 to .43. Only one correlation, that between the incidence of teacher's requests for the consultant's assistance at the start of the study and attendance rate, was significant. This indicates that those teachers who most expressed need for help followed through in this search throughout the two years of the study.

Correlation of the Teachers' Use of the Social Learning Curriculum and Inductive Method

Hypothesis III. There will be a significant positive correlation between the use of the curriculum and the application of the method. To test this hypothesis it was necessary to rate the teachers as either using the curriculum or not using the curriculum regardless of E or C group membership. The teachers were then evaluated as to their application of the teaching method.

Of the 24 teachers seven were judged as using the curriculum and eight as using the method. Of the eight using the method, six were found to be using the curriculum also. A phi correlation of .71 was obtained for the variables of the teacher's use of the method and curriculum. This was significant at the .01 level, thereby supporting the hypothesis. Thus, the teachers who used the inductive method generally used the social learning curriculum also.

E and C Student Performance

Hypothesis IV. The E students will obtain significantly higher scores than the C students on tests of intellectual development, academic achievement, social learning, personality development, and divergent thinking. One way of measuring teacher efficacy in implementing the curriculum and method is in the progress their students made on tests of intellectual development, academic achievement, personality development, and cognitive style.

Achievement Tests.

In Table 19 the pre-test, post-test, and difference scores on the M.A.T., Lee-Clark and TOBI for the E and C groups are presented.

Table 19

Pre-test, Post-test, and Difference Scores for M.A.T., Lee Clark, TOBI, and P.P.V.T., for E and C Groups (N = 148)

Test	E Group (N = 116)						C Group (N = 32)						
	Pre-test		Post-test		Difference		Pretest		Post-test		Difference		t of Difference Scores
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	
M.A.T. (grade equivalent) Word knowledge	1.57	.56	2.00	.70	.43	.38	1.54	.53	1.92	.63	.38	.45	.59
Word Discrimination	1.58	.64	2.16	1.03	.58	.63	1.58	.51	1.88	.75	.29	.42	2.47[a]
Reading	1.46	.48	1.78	.83	.32	.61	1.50	.46	1.86	.60	.36	.36	-.37
Arithmetic	1.49	.60	1.87	.84	.37	.58	1.47	.53	1.67	.58	.20	.34	1.59
Lee Clark[b] (grade equivalent)	1.13	.62	1.22	.59	.09	.40	1.22	.59	1.53	.55	.31	.48	-.81
TOBI (raw score)	17.49	8.31	23.77	8.15	6.28	4.63	16.91	6.01	23.38	7.19	6.47	5.32	-.25
P.P.V.T. I.Q.	74.37	12.31	75.02	13.00	.65	10.66	73.03	13.42	72.44	11.66	-.59	12.28	.30
P.P.V.T. M.A. (in months)	78.47	19.94	90.61	22.61	12.14	15.29	80.22	14.78	87.28	12.14	7.06	17.82	1.16

[a] Significant at .05 level with two-tailed test.

[b] N for E group = 47 and for C group = 12.

Both groups scored at the mid-first grade level on the four M.A.T. sub-tests on pre-testing. On post-testing the two groups scored at the late first and early second grade levels. The groups made from one-fifth to one-half year progress from pre- to post-testing, which is not inconsistent with the rate of development expected on the basis of their I.Q's. On the word discrimination sub-test the E group made a significantly greater gain than the C group ($\underline{t} = 2.47$; $\underline{p}$ .05). There were no significant differences between the two groups on the gain scores for the other three sub-tests.

On the Lee-Clark both the E and C groups scored at the beginning first grade level. On post-testing the C group made one-half year progress and the E group made one-tenth year progress. This trend for the C group to make a greater gain than the E group was not significant.

Social Learning Test.

Each group obtained an average raw score of 17 on the TOBI pre-test. Each group made a six-point gain on post-testing. The t value for gain scores for the E and C groups was not significant.

Intelligence Tests.

It can be noted from Table 19 that on pre-testing the E group obtained a mean P.P.V.T. I.Q. of 74.37 and the C group 73.03. On post-testing, the E group gained one point while the C group lost one point. This difference was not significant. The P.P.V.T. M.A. on pre-testing was 78 months or 6-6 for the E group and 80 months or 6-8 for the C group. The E group had a gain score of one year while the C group had a gain score of seven months. The difference between these gain scores was not significant.

Personality Tests.

On the response set questionnaire the E group obtained an average of 9.19 correct responses and the C group 9.44 on the last ten items. This difference was not significant. Neither group seemed to be negatively affected by whatever frustration were generated.

In Figure 1 the mean number of correct responses to the reinforced choice during each block of 20 trials of the probability learning task for the E and C groups is shown. The E group made an average of nine correct responses on the first block and gradually increased to a mean of twelve on the last block. The C group which began with a mean of eight correct responses followed a similar upward pattern over the five blocks and ended with a mean of ten correct responses. A Lindquist Type I analysis of variance (Lindquist, 1953) was applied to these data. The analysis of variance table can be found in Table 20. A significant difference was found between the E and C groups ($\underline{F}$ = 9.953;

p .005). Thus, contrary to the original prediction, the E students made more responses to the partially reinforced choice than did the C group.

Divergent Thinking Tests.

The divergent thinking scores for the E and C groups are shown in Table 21. On the Mother Hubbard Test the mean fluency score of 3.17 for the E group was significantly greater than the C group mean of 1.88 ($\underline{t}$ = 2.37; $\underline{p}$ .05). The originality scores did not significantly differ. There were no significant differences between the two groups on the three measures of the Product Improvement Test. The mean scores of the E group were higher than those of the C group on the three measures of the Unusual Uses Test; however, only the originality score proved to be statistically significant ($\underline{t}$ = 2.10; $\underline{p}$ .05). The E group's mean fluency score for the three tests was significantly larger than the C group's ($\underline{t}$ = 2.24; $\underline{p}$ .05). Although the E group's mean originality and flexibility scores were larger than the C group's, these differences were not found to be statistically significant.

Summary of Student Test Data.

In summary, the data on the achievement tests showed that in general there were no significant differences between the E and C groups at the end of the study except for the word discrimination test.

Table 20

Analysis of Variance of the Number of Correct Responses
Made by E and C Groups on Probability Learning Task

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	P
Between Subjects	20931.302	147			
Treatment Group (A)	1335.818	1	1335.818	9.953	.005
Error (1)	19595.484	146	134.216		
Within Subjects	3339.200	592			
Blocks (B)	300.772	4	75.193	14.626	.005
Interaction	35.966	4	8.992	1.749	.25
Error (2)	3002.462				
Total	24270.502	739			

Table 21

Divergent Thinking Scores for
E and C Groups (N = 148)

Test	E Group (N=106)		C Group (N=32)		
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	t
Mother Hubbard-fluency	3.17	2.89	1.88	1.96	2.37[a]
Mother Hubbard-originality	4.33	4.06	3.19	3.55	1.43
Product Improvement-fluency	6.41	4.96	5.59	4.02	.84
Product Improvement-originality	3.90	3.82	3.66	3.12	.32
Product Improvement-flexibility	2.84	1.89	2.50	1.52	.93
Unusual Uses-fluency	6.11	4.63	4.44	4.06	1.84
Unusual Uses-originality	2.53	3.20	1.25	2.24	2.10[a]
Unusual Uses-flexibility	3.20	2.56	2.31	1.82	1.82
Mean fluency	5.24	3.33	3.78	2.81	2.24[a]
Mean originality	3.57	2.67	2.62	2.58	1.76
Mean flexibility	3.02	1.93	2.41	1.46	1.65

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[a] Significant at .05 level with two-tailed test.

No differences were found for intellectual development as measured by the P.P.V.T. On the probability learning task the E group scored significantly higher than the C group. No differences on the other personality measure, response set, were found. On the tests of divergent thinking, three of the eleven scores were significantly higher for the E group. On the basis of these results Hypothesis IV must be rejected.

Teacher Background Characteristics and Teacher Performance

Hypothesis V. Teacher background characteristics will be correlated with the teacher's use of the curriculum and method.

Age. There will be a significant positive correlation between age and the use of the curriculum and method. The point biserial correlation between the teachers' age and their use of the inductive method was .11. The correlation for age and use of the curriculum was .10. Neither of these correlations was significant; thus, age does not seem to be related to teaching performance.

Professional preparation. Teachers trained in special education will use the curriculum and method more than teachers trained in other areas of education. Teachers trained in other areas of education will use the curriculum and method more than teachers with no training in education. Teachers trained in other areas of education will use the curriculum and method more than teachers with no training in education. It was not possible to analyze the special education, education, and non-education groups because the expected frequency requirement of the X^2 test could not be met. The special education and education groups were combined and compared with the non-education group on their use of the curriculum and method with the Finney method of the Fisher Exact Probability Test (Finney, 1948). No significant differences were found between the groups for either the method or the curriculum; therefore, the hypothesis was not supported.

Teacher experience with the mentally retarded. There will be a significant positive correlation between the number of years teaching the mentally retarded and the use of the curriculum and method. The point biserial correlation for teaching experience and use of the method was .18 and for use of the curriculum .20. Neither was significant; therefore, the hypothesis was not supported.

Teaching experience with normals. There will be a significant negative correlation between the number of years teaching normals and the use of the curriculum and method. The point biserials for teaching experience with normals and the use of the curriculum and method were .09 and .16 respectively. Neither was negative nor significant, thereby not supporting the hypothesis.

Variety of teaching experiences. Teachers experienced only with the mentally retarded will use the curriculum and method more than teachers with mixed experiences (i.e., experienced with the mentally retarded and normals). The expected frequency requirement of the X^2 test could not be met; therefore, the Finney method of the Fisher Exact Probability test was used. No significant differences for variety of teaching experience and use of curriculum or method were found. This hypothesis was not upheld.

Total years of teaching experience. There will be a significant positive correlation between the total number of years teaching and the use of the curriculum and method. The point biserial correlation of .41 for total years of teaching experience and use of the inductive method was significant at the .05 level. Thus, the more teaching experience a teacher has had, the more likely is he to use the inductive method. The point biserial correlation for total years of teaching experience and the use of the curriculum (r = .02) was not significant; thus, only the aspect of the hypothesis having to do with the method was upheld.

From these results, it might be concluded that the background characteristics of age, professional preparation and teaching experience did not significantly influence the teachers' performance in terms of their use of the inductive method and social learning curriculum. Thus, Hypothesis V was not supported.

SL and NSL Student Performance

The students of teachers using the social learning curriculum (the SL group) were compared to the students of teachers not using the social learning curriculum (the NSL group) to assess the effects of the experimental curriculum. These groupings include both E and C students since five of the E teachers and two of the C teachers were judged as using the curriculum.

Achievement Tests.

The pre-test, post-test, and difference scores for the SL and NSL groups on the M.A.T., Lee-Clark and TOBI are shown in Table 22. Both groups made one-third to one-half year progress from pre- to post-testing on the four M.A.T. sub-tests. None of the t values for these gain scores was significant.

The SL group made one-quarter year progress on the Lee-Clark post-test, while the NSL made practically no gain. The difference between these gain scores was not significant.

On the TOBI the SL group made a mean raw score gain of about five points while the NSL group made about a seven point increase. The t value for this difference was not significant.

Intelligence Test.

The P.P.V.T. I.Q.'s for the SL and NSL groups were practically identical from pre- to post-testing. The gain in P.P.V.T. M.A. for

Table 22

Pre-test, Post-test, and Difference Scores for M.A.T., Lee Clark, TOBI, and P.P.V.T. for SL and NSL Groups (N - 138[a])

Test	SL Group (N = 42)						NSL Group (N = 96)						t on Difference Scores
	Pre-test		Post-test		Different		Pre-test		Post-test		Difference		
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	
M.A.T. (grade equivalent) Word Knowledge	1.52	.56	1.98	.69	.46	.34	1.61	.56	2.02	.69	.41	.42	.39
Word Discrimination	1.65	.68	2.22	1.02	.58	.56	1.58	.60	2.11	.99	.53	.64	.49
Reading	1.52	.55	1.92	.66	.40	.36	1.49	.46	1.82	.80	.33	.59	.69
Arithmetic	1.51	.64	1.84	.90	.33	.54	1.52	.57	1.86	.74	.34	.52	.06
Lee Clark[b] (grade equivalent)	1.09	.62	1.34	.65	.25	.42	1.24	.61	1.27	.62	.03	.43	.93
TOBI (raw score)	17.79	8.64	23.10	8.58	5.31	4.44	17.66	7.67	24.58	7.61	6.92	4.90	1.66
P.P.V.T. (I.Q.)	74.19	13.45	74.00	13.08	.19	11.97	74.73	11.82	74.60	12.62	.13	10.67	.08
P.P.V.T. M.A. (in months)	80.48	20.43	91.12	22.20	10.64	16.57	80.33	17.60	89.28	20.06	8.85	15.71	.41

[a] Data were not available for 10 students.

[b] N for SL group = 15 and for NSL group = 36.

Table 23

Analysis of Variance of the Number of Correct Responses Made by SL and NSL Groups on Probability Learning Task

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	P
Between Subjects	20931.302	147			
Curriculum (a)	2155.195	1	2155.195	16.758	.005
Error (1)	18776.107	146	128.603		
Within Subjects	3339.200	592			
Blocks (B)	669.265	4	167.316	37.356	.005
Interaction	54.102	4	13.526	3.020	.025
Error (2)	2615.833	584	4.479		
Total	24270.502	739			

both groups was found not to differ significantly.

Personality Tests.

On the response set questionnaire the SL group obtained a mean of 9.10 on the last ten items while the NSL group obtained 9.27. This difference was not significantly different.

In Figure 2 the mean number of correct responses for the five blocks of the probability learning task for the SL and NSL groups are shown. The SL group had a mean of ten correct responses on Block 1. Then they made a sharp increase to twelve on Block 2. They showed a steady increase through Block 5 on which they had fourteen correct responses. The NSL group had an average of eight on Block 1. They showed a steady increase through Block 5 on which they had a mean of eleven correct responses. The SL group started at a higher level and made a quicker jump on Block 2 than the NSL group.

The difference between the SL and NSL groups was found to be significant with a Lindquist Type I analysis of variance (F = 16.75; p = .005). The significant interaction (F = 13.52; p = .025) indicates that the SL and NSL responded differently to the probability learning task as it progressed. This analysis of variance data is presented in Table 23.

Divergent Thinking Tests.

The divergent thinking scores for the SL and NSL groups are presented in Table 24. The two Mother Hubbard test scores for the SL group were significantly greater than for the NSL group. The t values for two of the three Product Improvement test scores (i.e., fluency and flexibility) were statistically significant in favor of the SL group. Only the flexibility score of the SL group was significantly greater than the NSL group on the Unusual Uses Test. The SL group's mean scores on fluency, originality, and flexibility were significantly greater than the NSL group's scores. Of the eleven t tests conducted to compare the SL and NSL groups' divergent thinking scores, eight were found to significantly favor the SL group.

Summary.

No significant differences were found either in achievement or intelligence tests. The probability learning task showed a significant difference in favor of the SL group for main effects and interaction. No differences on the response set were found. In divergent thinking the SL group was superior on a majority of the measures.

I and NI Student Performance

To determine the effects of the inductive method, the students of teachers using the inductive method (the I group) were compared to the students of teachers not using the inductive method (the NI groups). These groupings include both E and C students since seven of the E teachers and one of the C teachers were judged as using the method.

Table 24

Divergent Thinking Scores for
SL and NSL Groups (N = 138[a])

Test	SL Group (N=42)		NSL Group (N=96)		
	$\overline{X}$	S.D.	$\overline{X}$	S.D.	t
Mother Hubbard-fluency	3.90	2.99	2.42	2.53	3.00[b]
Mother Hubbard-originality	5.55	4.40	3.42	3.60	2.98[b]
Product Improvement-fluency	7.74	4.67	5.55	4.66	2.53[c]
Product Improvement-originality	4.12	3.50	3.72	3.74	.58
Product Improvement-flexibility	3.33	1.80	2.51	1.75	2.51[c]
Unusual Uses-fluency	6.81	4.41	5.25	4.54	1.87
Unusual Uses-originality	2.70	3.41	2.03	2.87	1.17
Unusual Uses-flexibility	3.79	2.72	2.65	2.22	2.58[b]
Mean fluency	6.02	3.23	4.41	3.17	2.13[c]
Mean originality	4.07	2.82	3.03	2.55	2.74[b]
Mean flexibility	3.55	1.93	2.58	1.74	2.90[b]

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[a] Ten students not included because in two classes that were dropped.

[b] Significant at .01 level with two-tailed test.

[c] Significant at .05 level with two-tailed test.

Achievement Tests.

In Table 25 the pre-test, post-test, and difference scores on the M.A.T. and Lee-Clark for the I and NI groups are shown. The TOBI scores were not analyzed because a measure of social learning did not seem to be related to inductive teaching. Both groups made one-third to one-half year gains from pre- to post-testing on the four M.A.T. sub-tests. There were no significant t values for any of the gain scores for the two groups.

On the Lee-Clark, the I group made one-fourth of a year gain while the NI group made no gain. The difference between their gain scores was not significant.

Intelligence Tests.

As can be noted from Table 25, the I group made a mean gain of 1.48 in P.P.V.T. I.Q. while the NI group lost one point from pre- to post-testing. This difference was not significant. In terms of the P.P.V.T. M.A., the I group made over a thirteen month gain, whereas, the NI group made only a seven month gain. This difference was significant at the .05 level ($t = 2.26$).

Personality Tests.

On the response set questionnaire the I group obtained a mean of 8.96 correct responses and the NI group 9.36 on the last ten items. The standard deviations for the I and NI groups were 1.46 and .80. This difference was significant ($t = 2.10$; $p =$ .05). This significant difference was due to the greater variability of the I scores.

Table 25

Pre-test, Post-test, and Difference Scores for M.A.T., Lee Clark, and P.P.V.T. for I and NI Groups (N = 138[a])

Test	I Group (N = 50)						NI Group (N = 88)						
	Pre-test		Post-test		Difference		Pre-test		Post-test		Difference		t for Difference Scores
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	
M.A.T. (grade equivalent) Word Knowledge	1.56	.58	1.96	.72	.40	.32	1.59	.55	2.04	.67	.45	.44	-.79
Word Discrimination	1.60	.66	2.17	1.06	.57	.59	1.60	.61	2.14	.97	.54	.63	.36
Reading	1.49	.56	1.86	.70	.37	.40	1.50	.43	1.84	.79	.34	.60	.19
Arithmetic	1.50	.63	1.85	.87	.35	.53	1.53	.57	1.86	.74	.33	.52	.06
Lee Clark[b] (grade equivalent)	.98[c]	.66	1.20	.67	.28	.43	1.32	.55	1.35	.60	.03	.43	1.04
P.P.V.T. I.Q.	74.26	14.37	75.74	14.59	1.48	11.95	74.74	11.01	73.67	11.54	-1.07	10.45	1.25
P.P.V.T. M.A. (in months)	80.04	21.80	93.76	28.20	13.72	17.54	80.56	16.33	87.61	14.52	7.06	14.54	2.26[d]

[a] Ten students not included because in two classes that were dropped.

[b] N for I group = 21 and for NI group = 30.

[c] Norms for this test extend below the first grade level.

[d] Significant at .05 level.

Practically all of the NI group obtained scores of nine or ten, while the I Ss' scores ranged from four to ten. From these results it seems that the NI students were less affected by the impossible questions than the I group.

The mean number of correct responses for the five blocks of trials on the probability learning task for the I and NI groups is shown in Figure 3. The I group had an average of nine correct responses on Block 1. They made a quick jump to eleven on Block 2 and showed a steady rise over the last three trials. They had a mean of thirteen correct responses on the last block. The NI group had an average of about nine on Block 1. They made a gradual increase over the five blocks ending on the last block with a mean of about eleven correct responses. The I group made a sharper and faster increase than the NI group over the five blocks.

A Lindquist Type I analysis of variance is shown in Table 26.

Table 26

Analysis of Variance of the Number of Correct Responses Made by I and NI Groups on Probability Learning Task

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	P
Between Subjects	20931.302	147			
Method (A)	1863.626	1	1863.626	14.270	.005
Error (1)	19067.676	146	130.600		
With Subjects	3339.200	592			
Blocks (B)	696.318	4	174.079	40.009	.005
Interaction	101.961	4	25.490	5.858	.025
Error (2)	2540.921	584	4.351		
Total	24270.502				

The I group made significantly more correct responses to the reinforced choice than the NI group ($\underline{F} = 14.27$; $\underline{p}$ .005). The significant interaction obtained ($F = 5.85$; p .025) indicates that the I and NI groups responded differently as the task progressed.

Divergent Thinking Tests.

The divergent thinking scores for the I and NI groups are presented in Table 27. The I group obtained significantly higher fluency

Table 27

Divergent Thinking Scores for
I and NI Groups (N = 138[a])

Test	E Group (N=50)		C Group (N=88)		
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	t
Mother Hubbard-fluency	4.04	3.16	2.20	2.26	3.96[b]
Mother Hubbard-originality	5.80	4.58	3.08	3.21	4.08
Product Improvement-fluency	7.36	4.93	5.57	4.56	2.16[c]
Product Improvement-originality	4.08	4.01	3.70	3.46	.57
Product Improvement-flexibility	3.18	1.87	2.52	1.73	2.08[c]
Unusual Uses-fluency	6.96	4.49	5.02	4.44	2.45[c]
Unusual Uses-originality	2.74	3.18	1.94	2.94	1.48
Unusual Uses-flexibility	3.72	2.69	2.58	2.18	2.71[b]
Mean fluency	6.14	3.34	4.19	3.02	3.50[b]
Mean originality	4.08	2.91	2.93	2.44	2.47[c]
Mean flexibility	3.42	1.90	2.57	1.75	2.66[b]

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[a] Ten students not included because in two classes that were dropped.

[b] Significant at .01 level with two-tailed test.

[c] Significant at .05 level with two-tailed test.

and originality scores than the NI group on the Mother Hubbard Test. The I group's fluency and flexibility scores for both the Product Improvement and Unusual Uses tests were found to be significantly greater than those of the NI group. The originality scores for these two tests were not significantly different for the two groups. The mean fluency, originality, and flexibility scores for the three tests combined with significantly higher for the I group than for the NI group. Of the eleven t tests between the I and NI groups' divergent thinking scores, nine were statistically significant, five of these at the .01 level and six at the .05 level.

Summary.

In summary, no significant differences were found between the I and NI groups on achievement tests. While there were no differences in I.Q., the gains in P.P.V.T. M.A. scores were significantly higher for the I group.

In the response set the NI group had significantly more correct responses than the I group while on the probability learning task the I group was significantly higher and a significant interaction was found. On tests of divergent thinking the I group was significantly higher than the NI group on nine of the eleven comparisons.

SUMMARY

Chapter III presents the results of the tests of the hypotheses. These are summarized as follows:

Hypothesis I. The E teachers will use the social learning curriculum in their classrooms more extensively than will the C teachers. This hypothesis was tested by use of a rating scale and by the subjective observations of the project consultants. The results of the rating scale showed considerable similarity between the groups except in certain elements of social learning and arithmetic. In these two areas, the E teachers were judged to use teaching materials more appropriately, to be meeting the social learning needs of their students, and to be creating independence in their students to a greater degree than were the C teachers. The observations of the consultants showed that a greater proportion of the E teachers were using the social learning curriculum more consistently and effectively. However, since less than one-half of the E teachers adopted the social learning curriculum, in the face of their special preparation this hypothesis can only be accepted with reservation.

Hypothesis II. The E teachers will use the inductive teaching method in the classroom more extensively than will the C teachers. This hypothesis was tested through the use of the rating scale, tape recordings of teacher-pupil transactions, and the subjective observations of the program consultants. The E teachers obtained significantly higher ratings on five of the 32 items of the rating scale. While the E group did not use the inductive material consistently or completely throughout the teaching day, they did use it more proportionately than the C group.

In the analysis of the tape recordings, a few differences were demonstrated. The observations of the consultants and measurement supervisor found that a majority of the E teachers and one of the C teachers applied the teaching method.

In composite, the three systems for assessing the extent to which the E teachers used the teaching method suggest that the teaching system was used to some degree but not to the extent that would permit unequivocal acceptance of the hypothesis.

Hypothesis III. There will be a significant positive correlation between the use of the curriculum and the application of the method. This hypothesis was tested by rating the teachers in both groups as to their either using or not using the curriculum. All teachers were then judged as to their application of the method. The data showed a significant correlation between those teachers who used the curriculum and generally applied the method. Thus, the hypothesis is supported.

Hypothesis IV. The E students will obtain significantly higher scores than the C students in tests of intellectual development, academic achievement, social learning, personality development, and divergent thinking. No significant differences were found in intellectual development, academic achievement or social learning. There was a significant difference in personality development in that a striving for success characterized the E group more than the C group. On tests of divergent thinking the E group was significantly superior on sub-tests of fluency and originality. In the eight other sub-tests the E group was consistently superior to the C groups, but the differences were not significant. Because the superiority of the E group was only established in a fragmentary fashion for divergent thinking and showed no differences in other areas, this hypothesis must be rejected.

Hypothesis V. Teacher background characteristics will be correlated with the use of the curriculum and method. This hypothesis was tested by correlating the vital statistics of the teacher (i.e., age, nature of preparation, experience, and years of teaching) with the frequency with which teachers were noted to apply the curriculum and method. The only significant correlation involved the total years of teaching experience and this was relatively low (.41). Thus, this hypothesis would have to be rejected.

No hypotheses were stated with respect to the effects of the inductive curriculum and method on the students. To explore these effects, teachers were grouped in accordance with whether or not they used the curriculum and method with some degree of consistency irrespective of E or C group membership. The data on the achievement, intelligence, personality, and divergent thinking tests showed that the only significant differences were found in personality and in the divergent thinking tests in favor of the inductive group and also the social learning curriculum groups. As was found for Hypothesis IV, the I and SL groups tended to strive for success more often than the NI and NSL groups on the probability learning task. The I group scored significantly lower than the NI group on the response set. No significant difference for the SL and NSL groups was found in this area. In divergent thinking, however, the I group was significantly superior on nine of the eleven sub-tests. When children were re-classified as members of the SL group, they were significantly superior to the NSL children on eight of the eleven sub-tests.

CHAPTER IV

DISCUSSION

This chapter presents a discussion of the data as they are responsive to the hypotheses stated earlier. The discussion of the results is within the context of a demonstration-research project, wherein it is clear that the nature of instrumentation and restrictions imposed by the terms of the study, require that strict adherence to the meanings of statistical tests of significance needs to be tempered with the respectability of the impressions of knowledgeable observers.

Application of Curriculum

Hypothesis I stated that the teachers in experimental classes will use the Illinois Curriculum Guide in their classrooms more extensively than the comparison teachers.

This hypothesis was tested by observer ratings of the competence of teachers to (1) group children most homogeneously for instruction, (2) establish and sustain relevant sequences for instruction in areas of learning, (3) identify and apply learning materials relevant to the areas of learning, (4) manage the procedures and substance of social learning, (5) achieve a balance between social and academic learning and (6) generate and sustain an appropriate learning atmosphere in the classroom.

The data relative to this hypothesis showed a limited number of significant differences between experimental and comparison teachers. These, however, were in the direction of support for the hypothesis. The limited positive differences suggest the influence of the curriculum and teaching system, and of the type of consultant help provided by project staff. Of the 30 areas of observation of teachers' use of the curriculum, the experimental teachers were rated higher in 22 (73%). Of these, the experimental teachers were significantly higher in their abilities to use arithmetic materials, and to generate a positive learning atmosphere in arithmetic. In addition, they were significantly superior in assessing the social learning needs of their children and in developing teaching procedures to respond to these needs.

Differences in Instruction

Credit for the differences in arithmetic instruction may be attributed to the project consultants who developed and oriented the teachers to a specially prepared arithmetic teaching sequence in which the subject matter was organized and where teaching procedures were provided in this area. A similar program was developed in language arts. In contrast, however, it was less detailed and therefore had less influence upon the teachers' activities. Even so, it is worth noting that the major areas of superiority of the comparison classes were in writing and spelling. In all of the conceptual areas of language arts, the trend was consistently in favor of the experimental classes.

The significant differences and the trend in social learning areas favoring the experimental teachers are important because they represent the most obvious reversal in teaching procedures in this project. At the beginning of the study, the observations of the consultants indicated that the one area that was most obvious by its absence from the classroom was a systematic social learning program. In many classes, the day was taken up with the teaching of academic subjects. In a few cases, teachers were dealing with current events and National holidays under the guise of traditional social studies in an attempt to respond to the social maturational needs of their pupils in accordance with their best speculation of what these needs were and how they should be met.

The training year was devoted, in great part, to getting the teachers to reconceptualize the focus of the special class and to become familiar with the nature and implementation of the curriculum. During the term of the study, the consultants worked closely with the teachers to sustain the momentum achieved during the training year by helping them assess the social abilities of their students as a foundation for decision making about the social learning relevant to their classes.

Thus, it may be said, with some reservation, that the experimental teachers tended to respond to the guidance provided through the curriculum although, as will be seen from data discussed later, there was considerable room for improvement. The observations by consultants support the rating scales in this respect and emphasize the importance of trends in the scale.

Teaching Method

Hypothesis II states that the experimental teachers will use the inductive teaching method in their classrooms more extensively than the comparison teachers.

Data to test this hypothesis were provided through an observer's rating scales and by way of tape recordings of teacher pupil transactions.

Teachers were rated on a five point scale in each subject matter area (academic and non-academic) on management of the classroom, appropriateness of use of the method, use of cues and reinforcement, teacher responses to incorrect answers, and ability to close out transactions by having the students effect generalization and summarize the transaction. In each case, the ratings ranged from rote teaching at one extreme to consistent inductive teaching at the other. A mid-score of 3 was indicative of a mixture of the two in the form of vacillation from one teaching method to the other even in the course of a single transaction.

The data show that both the experimental and comparison teachers tended to be eclectic in their choice of teaching method. The trends suggest, however, that the E teachers were closer to consistency in inductive teaching in most areas that were ratable (75%). They were significantly superior in inductively teaching the social learning subject matter, in providing learning cues most consonant with the experiences of their students, and in their awareness of the need to respond to incorrect answers of students by re-phrasing the question rather than supplying the correct answer.

At the same time, the data show that the E teacher tended to limit their application of this method and to fall back on the more expeditious methods by providing evaluation of student responses and by restructuring their responses for them instead of giving the responsibility to the student. This is consistent with their tendency to stop short of getting the most out of the transaction by omitting an opportunity for the students to elicit a generalization (where this was possible) or to summarize what has been learned. The habits of rote teaching encroached sufficiently in teaching transactions in E classes to vitiate any differences despite the trends in favor of the E teachers.

Analysis of tape recordings corroborate the observers' data insofar as the tendency of the C teachers to apply a rote system for teaching was concerned. The C teachers asked significantly more memory questions in all academic areas combined but particularly so in arithmetic. Not unexpectedly, their students gave significantly more rote memory responses and were more often correct in their responses. Thus, the C teachers stressed the memorization of facts as opposed to learning concepts, and in return got from their students a correct statement of the fact. This may help to account for a tendency on the part of the children in C classes to be superior to the E children in spelling and writing.

In combining the results of the rating scale and the analysis of tape recordings, one may conclude that the E teachers tended to teach inductively, but with limited appropriateness and effectiveness. Nevertheless, their effectiveness, where significant, was in areas pertinent to the hypothesis. Similarly, where comparison teachers differed significantly from experimental teachers, it was in areas that support the hypothesis. That is, they were significantly more rote in their management of learning. On a nose count basis and without any qualitative implications, observers report that where the inductive method was used at all, it was used in the E classes.

Changes in Competence

Implicit in the foregoing is the factor of change. All of the data are based on the assumption that E and C teachers were similar in their competence to structure curriculum and differentiate method at the beginning of the study. While project staff, the teachers, and administrators find in the data confirmation of their impressions that change in the direction of enhanced teacher competence did take place, these would have been more convincing with pre and post evaluation data relative to change.

The nature of this demonstration-research project did not permit pretesting for many reasons. Firstly, in the planning stage, it was impossible to specify the particulars of evaluation beyond molar kinds of behavior. Secondly, the logistical problems in obtaining samples and training the E teachers did not permit for development and/or modification of new or available instruments.

Instead, the two consultants on the project staff were asked to keep logs of their visits and, among other observations, to note signs of teacher change and their nature. They did so by evaluating teachers according to specific teaching attributes and in their relationship with the consultants at the conclusion of each visit.

It is worth noting that classroom management problems were clearly of significance from the time that candidates for the study were first approached. The large majority of teachers who could have participated stated that they were too preoccupied with classroom management problems to take on another task. It is highly likely that those who did volunteer felt that they had these problems solved well enough to branch out into activities that might contribute to more effective teaching. While the experimental teachers were relatively competent in classroom management as compared with their pedagogic abilities, the combined anecdotal notes and ratings show that the majority were able to steadily increase the amount of teaching time and effectiveness as their management problems decreased.

Change was a persisting factor during the two years of the study and this is borne out in the tabular data. Nevertheless, while change was entirely in the desired direction, there was room for much more in almost every area of curriculum application and teaching method. Whereas most of the teachers were rated as mediocre or less than mediocre in their total performance at the beginning of the study, only one-third were so rated at the end. Even so, the teachers continued to look to the consultants for guidance and help despite their observed competence. This suggests that teachers may feel insecure when anything as abstract as a teaching method (or a socially oriented curriculum) is attempted without immediate feedback as to teacher effectiveness. With the consultants available to give such reinforcement, enough security was provided for the teacher to move forward in the development of pedagogic skills.

In defense of the teacher, it is worth noting that a rote system of teaching does allow for most immediate feedback in the form of student response. A teacher knows immediately that he is getting a correct or incorrect response. In teaching conceptually, however, the teacher knows very well that he cannot rely on the utterances of his students as being the best evidence of "knowing". He needs to wait for the independent behavior in problem solving, for example, that shows that the concept has been learned. This type of behavior may take awhile to emerge.

The investigators did not anticipate the difficulty teachers would have in implementing and reconciling a complex teaching method, probably because they are most familiar with the accomplishments of teachers emerging from an undergraduate teacher preparation program where early introduction to the teaching method, and continuing demonstration and practice are experienced prior to teacher certification. In contrast, the experimental teachers, many of whom had prior preparation and experience in regular classes, were given on-the-job training in the form of more or less traditional in-service training. Clearly, this is not as effective as would be desired.

An almost identical picture is seen in the before and after ratings on use of the curriculum and in the degree of independence achieved. The relative insecurity of the teachers in this case, however, was due to the wide variety of curricular choices to be made in determining what aspect of social learning was most appropriate for their classes. These were "typical" classes for the EMR: that is, considerably heterogeneous in C.A., M.A., and social sophistication. Therefore, the selection of the most relevant ten life functions in the Illinois Guide was dependent upon the rampant cues, found within these classes. Rarely was one outstanding; more often, two or three and sometimes four clamored for attention. It was at this point that the consultants played a most important role. They brought to the decision making task an additional observation along with a greater degree of objectivity than the teacher.

As one considers the problems of the teacher in making decisions about innovations in teaching method and curriculum, it becomes clear that all teachers, to some degree are going to need help. Administrators assume that the training of the special class teacher makes him a specialist who can operate independently of the usual guidance resources available to teachers. Administrators and supervisors who urge their teachers in the direction of complete independence may be doing so at the expense of productive teaching and learning. What is probably needed is the most positive amalgam of independence and dependence as indicated by the educational program, the nature of the teacher, and the constituency of the classroom at any given time.

Receptivity to Consulting Help

Within the framework of the consultants activities, it was noted that about 25% of the teachers were less than moderately receptive to the consultants' help at the beginning of the study. This could be due to: (1) unsatisfying past experiences with supervisors or (2) administrative pressure put on some of the teachers to take part in the study or (3) lack of certainty of the consultants' competencies.

In any case, as the contribution and demeanor of the consultants became clear to the teachers, there was a strong trend toward accepting the help of the consultants and cooperating with them. The number of visits by consultants in the two years of the study far exceeded anything by way of help that the teachers had received previously. In addition, the consultants were able to communicate to the teachers that they were there to help them and not to over-see. Thus, teachers felt that for the first time there was constructive communication between classes.

The nature of the contribution of the consultants, along with their frequent visits, not only won over half of the skeptics but also increased the receptivity of those who were on the fence and luke-warm. By the end of the study, almost half of the teachers were fully receptive of the consultant's contribution.

All of the foregoing suggests that teachers approach consultive help, usually referred to as supervisory, with some reservations. In some cases, this may be due to their pessimism about an annual or semi-annual visit by someone they know only officially. In other cases, it may be due to the teachers' reticence to expose themselves to criticism because of their own feelings of inadequacy. It is highly likely that some teachers reject the consultant because they feel that they already know more about their craft than the consultant and that he is only wasting their time. There is more than a grain of truth in each possibility. It remains for the consultant to be competent and visible enough to reduce the unreal instances to a minimum.

At this point, the discussion of the results represents a combining, of the data relative to Hypothesis I and II, and the results of the teacher change rating scale. The statistical results and judgements of the consultants seem to warrant the conclusion that, as compared with the C teachers, a sizeable proportion of the E teachers used the Illinois Guide; therefore, Hypothesis I can be accepted with reservations. Many of the E teachers who were not using the curriculum at the beginning of the study were applying parts of it. This can be attributed to the training program and the contribution of the consultants. While Hypothesis II can be accepted similarly, a proportion of the E teachers were applying the teaching method at the end of the study which, likewise, may be attributed to the training and the contribution of the consultants.

This raises the question of why less than half of the E teachers were able to achieve satisfactory ratings in the use of the curriculum and teaching methods. To answer this question we need to evaluate the data connected with Hypothesis I and II.

Training

It will be recalled that the E teachers received two semesters of training prior to the two years study. This was conducted within the tradition of in-service training. That is, there were weekly after-school lectures and some on-the-scene demonstrations. The investigators agree that this style for modifying the behavior of teachers is seriously limited, particularly in the dynamic areas of pedagogy and classroom management. The setting is so artificial and distant from the realities of children and subject matter confrontations that transfer is almost impossible to achieve. Clinical psychology has been aware of the limitations of this means for behavior modification for a long time. Education, however, is not. We still attempt to tell teachers how to behave under stress, and in situations where split-second decisions need to be made. Obviously, if teachers are, for any reason, unconvinced or unsure about recommendations for action contained in lectures, they will, under stress, fall back on their best interpretation of "what has worked before" with the hope that the past experienced are relevant to the present situation. This is a rational behavior in light of the penalties for losing control of the transaction.

It is important to recognize that all of the E teachers could describe in detail the nature of the curriculum and the precepts for using the inductive teaching method. If the evaluation of the in-service training was limited to a final examination, all of the E teachers would have received high marks. The test, however, is in the classroom and here relatively few were able to display the outcomes of in-service training. Even then, they needed the help and guidance of the consultants to attain visible competence.

Management Problems:

There were a few cases where something other than confusion stood in the way of the teachers. This was in a few classes where the behavior problems of the children militated against any consistant pedagogy. In these classes, the need to indoctrinate the children toward the kinds of behaviors consonant with learning of school substance transcended the intent of the teacher to use the curriculum. Teaching, in the professional sense, was necessarily sporadic and therefore lacked the impact and increments that derive from continuity. This tended to neutralize the data on the productivity of teachers who applied the curriculum and method well.

Unwillingness of Teachers to Change.

Beyond those teachers who were unable to change, some of the teachers not using the curriculum and method well enough to be so rated were clearly unwilling to change their ways of doing things. These teachers were, by any reasonable standards, relatively ineffective. They were eclectic in their choice of subject matter for their classes and remarkable rote in their teaching. Many put on a facade of compliance toward the theme of the study and the recommendations of the consultants. They expressed good will and discussed intelligently what needed to be done, but once transactions began, they reverted or they somehow never got "planned and agreed upon activities" started.

It is difficult to tell whether the unwillingness of these teachers to get to the heart of the study was due to poor preparation for the work or to some kind of personality factor, or both. In any case, their performance tended to neutralize the effects of the more cooperative teachers.

Negative attitudes.

The consultants' logs and the observations of the raters indicate that a number of teachers established implicit levels of performance for their students through their low estimation of the abilities of retarded children. There were those who implied that mentally retarded children couldn't learn to think critically and act independently. They felt that these children can reach a respectable level of performance if they are thoroughly coached (conditioned) in the desired behavior. These teachers reflected their negative attitude in the fact that their teaching style was predominantly rote.

The consultants attempted to modify these attitudes in many ways, e.g. through discussion: by way of demonstration, and by having these teachers observe the methods of more optimistic teachers. They are not, however, sanguine about the effects of these as attitude modifiers.

Correlation of Curriculum and Method

Hypothesis III stated that there would be a significant positive correlation between the use of the curriculum and the application of the method.

To test this hypothesis, all of the teachers (E and C) were grouped as using the inductive teaching method within the context of the socially oriented curriculum. This approach would be consonant with the expectations for academic and intellectual change in a study spanning two years involving retarded children ranging in chronological age from 6 to 12. This will be discussed later.

At the time that the hypothesis was stated, the investigators were well aware of the improbability of demonstrating significant changes in I.Q. because of the prior experiences of Kirk (1958), Goldstein, Moss and Jordan (1965), and Stroud and Smith (1960). Similarly, it became obvious in the course of the study that the test designated to assess social growth is best suited to younger children, in that it focuses more on factual social knowledge than on the concepts contained in the socially oriented curriculum, Moss (1962).

Considering the factors militating against dependable differences in a relatively short-term study, it seems that the only real remedy would be intensive, appropriate teaching. As already stated, less than half of the E teachers taught appropriately. As far as intensive teaching was concerned, Minskoff (1967), in her investigation of the nature of teacher-pupil transactions in the present study found that on the average teachers devoted 30% of the teaching day to the rituals leading up to and including lunch, to "cleaning up", and to the non-academic areas such as arts and crafts.

The foregoing help to account for the clear lack of differences in the areas tested. Only in achievement was there a significant difference in favor of the E group. This was in the Metropolitan Achievement subtest Word Discrimination. This finding is difficult to explain in light of the lack of differences in other areas of language arts. (The most parsimonious explanation would suggest that the significant "t" is a function of the probability operating when one performs a multitude of "t" tests.) Similarly, there are spotty differences in personality development and divergent thinking for which it is difficult to account.

Rather than discuss these within the traditional E vs. C group clusters, it would be more important to the outcomes of this study if the data reflected the intended groupings; namely, children in classes where the social learning curriculum and inductive method were employed as compared with children in classes where curriculum is more eclectic and where the teaching system is less inductive.

In the course of the study, 5 of the 17 E teachers achieved high ratings in use of the curriculum and method. The reports of observers indicated that 2 of the 7 C teachers were so rated. Thus the children in these 7 classes (hereafter designated as SL classes) were compared with those in the 17 classes not applying the curriculum and method (NSL classes). The N's were 42 and 96 respectively.

As stated in Chapter III no differences were found between the children in these classes in intellectual development or achievement. In personality development, however, the predicted outcomes were reversed. In the probability learning task, where it was anticipated that the SL group would strive less for success, the opposite was found.

The prediction that the children in the SL classes would be less in pursuit of success was based on the results obtained in the study by Goldstein, Moss and Jordan (1965) which showed that children in the E classes were exposed to less opportunities for failure than those in the C group. The C children, for example, were studying from readers which were above their measure of reading levels. The E children's readers were more consonant with their abilities.

Why then were the results in this aspect of the study opposite to those predicted? Firstly, unlike the children in the Goldstein, Moss and Jordan study, it is not unlikely that the children in the SL classes were being made to do what was required of their teachers; namely, to give up seemingly secure and familiar ways of doing things in favor of what initially appears to be a less structured procedure, and one with delays in reinforcement. It should be kept in mind that the children in NSL settings get wrong answers corrected for them almost immediately after their response is made. Furthermore, reinforcement is almost unilaterally provided by the teacher. Thus, the child more often than not has a good idea of how he stands with respect to his role as a student. Likewise, he has a clear view of the role of the teacher.

The children in the SL classes suddenly, and after many years of seeming security, had old familiar ways changed for them almost overnight by their teachers. Now they were asked to examine their own responses, to ascertain the consonance of the response with the question. They were asked to process data and, at the same time, to learn a style for processing that would more often than not culminate in reaching a satisfactory answer. But they were not given the answer nor were they given overt reinforcement for the answer itself until the teacher satisfied that they had processed the data properly.

It is likely that the two years of the study brought these children into teacher-pupil transactions more dynamically and profitable (as will be seen later), while increasing their feelings of insecurity and anxiety. It is also likely that the results achieved in the Goldstein, Moss and Jordan study would have been achieved in this study if the SL children were measured at the end of four years instead of two, or if they had started in special classes in which an inductive method of teaching was used at the outset of their school careers. As it appears, they were caught in a period of transition from a more nearly rote method of learning to one predominantly inductive; a period in which they had to think critically and act independently. This could lead to perceptions of failure and feelings of frustration. That this is not as debilitating as it might seem to the children is seen in the fact that they did not suffer in intellectual and academic achievement during this period.

The more obvious effects of the SL environment are found in the tests measuring children's ability to think divergently. Here the predictions were born out. Of the three areas studied, (the Mother Hubbard Test, the Product Improvement Test, and the Unusual Uses Test), the SL children were significantly superior in 8 of the 11 measures. They were, on the average, significantly superior in fluency, originality, and flexibility.

These tests reflect the goals of the inductive method, namely to so arrange the teaching environment and teacher-pupil transaction that the child can play an active role in problem solving. Practice is given in differentiating relevant from irrelevant cues and in effecting associations of facts and concept that will lead to inferences, predictions, and generalizations made by the child and evaluated by the child and teacher in combination. The tests of divergent thinking present the child with problem solving tasks which tap the abilities developed by an inductive system of teaching which, in turn, is most consonant with the substance of a socially oriented curriculum. This is the case with tests of intelligence and of academic achievement.

One could conclude from the foregoing that the combination of a socially oriented curriculum and inductive teaching method contribute in part to children's abilities to think critically and independently. Clearly, tests of intelligence and academic achievement do not reflect these abilities to the extent that tests of divergent thinking do.

Hypothesis IV stated that teacher background characteristics would be correlated with the teacher's use of the curriculum and method. The usual data were collected to test this hypothesis. Correlations were made between effectiveness and age, professional preparation, experience with the retarded children, experience with normal children, variety of teaching experiences and total years of teaching. The only significant correlation, albeit low, was found between use of the method and total years of teaching experience.

The data bear out the observations of the consultants who found that teachers who had solved most of their classroom management problems were most able to attend to the changes required of them in the implementation of a "different" curriculum and teaching method. Logically, it takes time to acquire the techniques of classroom control. The fact that the correlation was relatively low (.41) suggests that some teachers take less time than others, and that there were some of the "less" experienced by years teachers in this group.

Conclusions

Despite the complexity of this study and even in the face of the many pockets of inconclusive data, there are certain bits of information that, in the opinion of the investigators, merit further consideration. These, it is felt, have implementations beyond what the results herein indicate.

In perusing the conclusions, the reader needs to keep the limitations of this study in mind so that perspective is maintained. For this reason, the caveats discussed earlier are repeated here.

In designing the present study, it was recognized that the nature of the investigation, the criteria for sampling, and the means for evaluation placed serious limitations on the "scientific" stature of the study as a whole. One needs to recognize that the "catch-as-catch-can" conditions for such a study -- the fact that the teacher, substance, and system have, at best, only face validity; the fact that teachers in the "experimental" classes were volunteers, and that their students were concomitants of the teachers' volunteering; the fact that available descriptions of children thus captured were random in nature and vague in detail; the fact that modes for observing what occurs in a pedagogic setting are still crude; and the fact that measurement devices lack the level of efficiency required for this type of study.

Due to these conditions, it is necessary that a conservative approach be employed. Thus, the concept of control, as it is usually applied in objective investigations, needs to be limited to comparison - both in fact and in action.

It should be kept in mind that the spirit of this demonstration research project was to show that teachers who apply a socially oriented curriculum using an inductive teaching style will achieve results consistent with the needs of retardates at maturity. Apart from the achievement data, the intent of the project, even within the limits imposed by uncontrollables, was met. It will be recalled that children in classes where the socially oriented curriculum and the inductive method were employed appropriately were significantly superior in personality and cognitive characteristics consonant with critical thinking and independent behavior. It could be assumed that even though these children did not outstrip their peers in "traditional" settings in academic achievement, they would employ academic skills as problem-solving tools more creatively and surely. This statement is an extension of the data that bears further study, in that it would put academic learning into a more appropriate perspective which was not the case in this demonstration project.

It is also worth noting the results of the data relevant to the interactions of consultants with teachers. Most interesting was the reversal of the teacher's attitudes toward the consultants wherein a sizeable number who rejected (overtly and covertly) the help of the consultants became accepting and cooperative. This can be accounted for by the fact that the consultants brought to the classroom more than sincere interest and a sympathetic ear. In addition, they presented the teachers with concrete teaching suggestions and materials. They developed systematic means for evaluating the status of the class with respect to the aspect of the curriculum most relevant to the needs of the class. They conducted workshops so that teachers could display and demonstrate teaching techniques and aids. Above all, they developed and presented to the teachers sound and thorough systems for teaching arithmetic and language arts. These were in the form of teaching guides and were very detailed. In addition, they were responsive to teacher's calls for help and responded without reservation. This project suggests strongly the role of the consultant and how it should be fulfilled.

It is most important to note that the cohesive role played by the consultants in this project was not anticipated in the original plan. The discrepancies in communication and leadership between experimentors and teachers that emerged required that the consultants enrich their transactions with teachers. Instead of serving in the usual supervisory role, our consultants had to make literal translations of the training program into classroom actions. To do this, they planned and activated demonstrations and workshops. Beyond this, they developed thorough teaching sequences in language arts and arithmetic.

The gaps in communication between the project staff and the teachers were analogous to those between local administration and teachers. The remedies imposed by the consultants were therefore analogous to those required of traditional supervisory staff. It would be most important, then, in planning research and/or demonstration in special classes that the role of consultant or supervisor be as full and contributory as conditions demand. The gaps in teacher competence, in teaching facilities, and in classroom procedures need to be examined prior to the study and accomodated from the beginning.

This project does not answer a pervasive question; namely, what are the teacher variables that differentiate those who accept direction, who are amenable to change, who are willing to work toward positive change from those who cannot or will not change? Certainly, the usual teacher data do not differentiate these types. Until we learn what factors are operating, teacher preparation, in-service training, supervision, and teacher workshops will remain random in their results. When we can predict what kind of teacher profits best from what kind of improvement design, we will be able to employ appropriate measures profitably.

While the results of this project are positive in a modest sense, its greatest contribution, from the viewpoint of the investigators, is in the direction of its implications for further study. Beyond the work that is needed to develop and improve existing measurement techniques and devices for use with retarded children, we need to turn our attention to the specification of a program of substantive education for these children and youth, and to test it rigorously so as to ascertain both validity and reliability.

Further, we need to study the relationship between the substantive elements of an educational program and the systems by which these elements are managed in teaching transactions. This project shows that there is a dynamic relationship between the two. The implications of certain child and teacher variables to this relationship need to be studied so that teachers may employ them most effectively.

Modification of teacher behavior needs further investigation. It was found in this study that in-service training by the lecture method has limited and specific increments. It increases teachers knowledge far more than it affects teaching behavior. The nature of in-service training, as a device to effect positive change, needs further study.

The role of the consultant-supervisor needs further review. In appointing a supervisor, the need for a consonance between teacher's expectation of someone occupying this role and what he is able to deliver must be considered. The results of this project suggest that teachers have learned to approach/avoid a supervisor with some cynicism and reservation. We need to examine how these attitudes evolved and what it will take to change them.

Finally, we need to re-assess the relevance of research designs for classroom and other institutional studies. Obviously, the biological model confuses more than it clarifies. One should not have to devote so much time and energy to qualifying results because of design insufficiencies and confusions. There are implications here for both research methodology and for the training of researchers.

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APPENDIX A

Description of the Inductive Teaching Method*

The primary goal for the education of the mentally retarded child is to prepare him "to think critically and independently to the best of his ability." The social learning curriculum is related to critical thinking in that it provides the retarded child with the basic data (i.e., facts, concepts, skills, etc.) employable in evaluating his environment. The inductive teaching method is related to independent thinking in that it encourages the retarded pupil to use the basic data provided by the curriculum to make decisions independent of external guidance.

The inductive or experimental teaching method (the E method) contrasts with other methods that might be used in special classes (control or C methods) as follows:

1. The nature of the learning situation as reflected in teacher questions. The E teacher seeks to develop the retarded child's ability to think independently by placing pre-eminence on the development of problem solving ability. This method calls for the child's use of inductive reasoning to arrive at a solution to a problem (hence, the label "inductive method)." Therefore, the E teacher poses a problem situation and asks questions requiring the student to use reasoning to arrive at a solution to the problem.

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*Adapted from: E. H. Minskoff, "Verbal Interactions of Teachers and Mentally Retarded Pupils" . . . unpublished Doctoral Thesis, Yeshiva University, 1966.

The C teacher is concerned with fact dispensing and rote learning. Thus, her questions require the use of memory or simple cognition. This serves to encourage the retarded child's dependence on others to solve his problems.

2. Selection of cues to structure the learning situation and to elicit pupil responses. The E teacher's goal is to structure the learning situation so that the pupil can see the cues relevant to solving the problem, make the appropriate association of the present cues with already learning facts, and then either develop a hypothesis that will enhance the probability of arriving at an appropriate solution to the problem or goes directly to the solution. The E teacher's selection of cues is based on her diagnosis of the child's fund of knowledge in each ability area. Thus, the cues provided are relevant to the problem and appropriate the child's developmental level.

The C teacher does not create problem solving situations, and thus may not be concerned with the selection of relevant cues. If she does attend to the cues provided, it is probable she does not select them in relation to the child's developmental level. Thus, the cues provided by the C teacher may be neither relevant nor appropriate.

3. The nature of teacher feedback to student performance. With the E method the (1) child's correct responses are immediately reinforced. After the child has (2) incorrectly responded, the

teacher gives negative reinforcement and/or signals the child to evaluate his response and then re-respond. The E teacher does not prompt the child nor does she supply the correct answer. If the child persists in giving the incorrect response, the E teacher evaluates the situation to determine whether the appropriate response has been built into the child's response repertoire in sufficient strength to be elicited or whether the cues are appropriate. Then the E teacher (3) re-structures the learning situation accordingly. Hence, the teacher is teaching and testing simultaneously.

By using this approach, the E teacher is building into the retarded child mediating behavior which encompasses the following learnings. (a) The child learns to assess the results of his action by observing its impact on others. (b) He learns that it is appropriate to re-read the cues provided by the teacher as they relate to his response. (c) He acquires a feeling of independence from the realization that through his own efforts he can solve a problem.

After a student's correct response, the C teacher provides positive reinforcement; therefore, the E. and C teachers do not differ with respect to correct student performance. However, one of the most critical differences between the E and C teachers is their feedback to incorrect student responses. The C teacher does not ask the child to evaluate his wrong response nor does she ask him to re-respond. Often she provides the correct response. Thus, the teacher acts as the sole judge of right and wrong, and builds the dependence of the retarded child.

4. Consistency of teaching methods. The E method is used consistently from one subject matter to another. Because it underlies as many teacher-pupil interactions as possible, it pervades the non-academic as well as academic areas of instruction. The C methods are usually eclectic and sketchy. They are generally related to objects, teaching aids, guides accompanying texts, etc. Thus, there is much variation from one subject matter to another; and this variation is most marked between the academic and non-academic subjects.

In Fig. 1 the methods are contrasted diagrammatically so as to highlight their differences. The methods differ in: (1) the types of questions asked by the teachers; (2) the types of cues provided by the teachers; (3) the processes used by the students to answer the teachers' questions; (4) the teachers' feedback to incorrect student performance; and (5) the amount of responses made by the students.

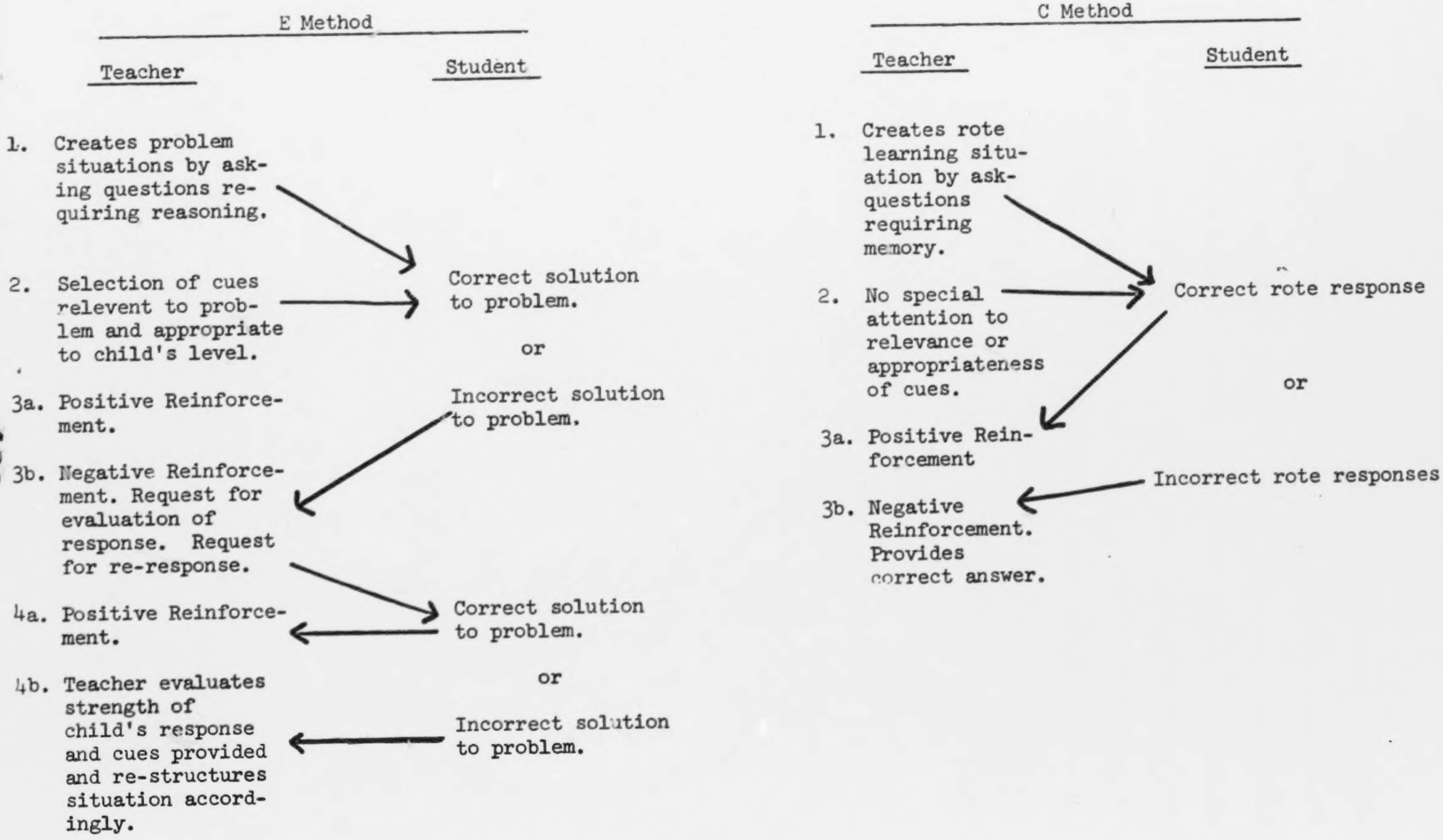
If another dimension could be added to Fig. 1, it would show that the E method is used consistently in all subject matter areas, while this is not true for the C methods.

From this comparison of the E and C methods, Goldstein's contention that the inductive method develops independent thinking while the other methods do not seem well-founded.

Wallen and Travers (1963) state that "an unreasonable assumption is made that, because a teaching method has been described, corresponding patterns of behavior can be, or are, manifested by teachers" (p. 467). Medley and Mitzel (1963) propose that teaching methods can only be differentiated by direct observation in the classroom. Hence, an objective of this study was to make explicit the actual teaching behaviors of the teachers supposedly using the E method and those using the C methods, and to determine whether these were congruent with Goldstein's descriptions of these methods.

Figure 1

Comparison of the E and C Teaching Methods


E Method
Teacher
Student
1. Creates problem situations by asking questions requiring reasoning.
2. Selection of cues relevent to problem and appropriate to child's level.
Correct solution to problem.
or
Incorrect solution to problem.
3a. Positive Reinforcement.
3b. Negative Reinforcement. Request for evaluation of response. Request for re-response.
Correct solution to problem.
4a. Positive Reinforcement.
or
4b. Teacher evaluates strength of child's response and cues provided and re-structures situation accordingly.
Incorrect solution to problem.
C Method
Teacher
Student
1. Creates rote learning situation by ask-questions requiring memory.
2. No special attention to relevance or appropriateness of cues.
Correct rote response
or
3a. Positive Reinforcement
Incorrect rote responses
3b. Negative Reinforcement. Provides correct answer.

APPENDIX B

Description of the Teacher In-Service Preparation Program

Teacher Preparation

The divergent professional preparation and special education experience of the experimental teachers indicated a wide range of understanding and practices related to curriculum and methods for the retarded. Therefore, the underlying rationale of the teacher training course and/or workshops was to compensate for inter-teacher variability by creating a uniform frame of reference concerning the theoretical and practical aspects of the teaching method, social learning curriculum, and the skill areas of arithmetic and language arts.

The topic outline reflects the didactic and experiential content of the preparation course. Following each lecture and demonstration, the teachers received a detailed summary of each session entitled "training course minutes" as recorded by a teacher secretary. Below is an outline of the topics in the preparation course:

Topic

A. Overview of Project:

1. Discussion of the project's objectives and operational procedures.
2. Elaboration of the teaching method as related to the child's psychological repertoire and appropriate evocative teacher behaviors.
3. Discussion of the significance of critical thinking and independent problem-solving for the educable retardate.

B. Arithmetic:

1. Presentation of the arithmetic-processes model and definition of arithmetic terms.

2. Development of the concepts in the arithmetic-processes model (see Figure 2.)

    a. Readiness
    b. Rote and rational counting
    c. Number recognition, writing and sequence
    d. Sample grouping
    e. Place value
    f. Addition and substraction
    g. Multiplication and division
    h. Problem solving

3. Demonstration of arithmetic materials, teaching aids, textbooks, and worksheets.

C. Language Arts

1. Presentation of the learning theory based on mass, differentiation, and integration as the basic language arts model of instruction.

2. Introduction of methods to develop:

    a. Word recognition
    b. Basic sight vocabulary development
    c. Phonetic word attack skills
    d. Identification of the five stages of reading comprehension, i.e., labels, details, inferences, predictions, and generalizations.

3. Utilization of student experiences as the basis for listening, speaking, reading, and writing activities.

4. Demonstration of reading materials, commercial reproduction materials, textbooks, and workbooks.

D. Social Studies

1. Development and elaboration of the expanding environment model as related to "life problem" approach of the Illinois Plan.

2. Introduction of the physical, social and psychological aspects of social interaction as related to the model.

3. Utilization of audio-visual aids.

4. Correlation of social learning and subject matter areas.

5. Development and utilization of social studies units.

6. Summary of classroom applications of the reading method within the context of the social learning curriculum.

Voluntary Workshops on Instructional Materials

As a result of limited time and amount of teaching materials displayed during the initial training course, three subsequent teacher workshops were organized. The primary purposes of the workshops were:

1. To demonstrate the applicability of the training course principles, concepts and methods to the physical and instruction context of "typical" project classrooms;

2. To encourage the participation of experienced project teachers as contributors to the training program;

3. To provide an exchange of ideas, materials, procedures, and methods between teachers of similar class groupings, i.e., by chronological ages and/or levels of functioning;

4. To investigate the ways and means of adapting commercial books and materials to fit the variability of student performance; and

5. To culminate the training with pragmatic examples of the applicability of curriculum and method to the educable retarded student.

The format for each workshop was identical. The four host teachers conducted tours of their classrooms; demonstrated successful materials, techniques, and practices; and conducted an informal question and answer session. Finally, the assistant project director summarized the proceedings and related the materials and methods to aspects of the experimental curriculum and/or method. While the host teacher and assistant project director had pre-selected the general type of materials to be demonstrated, the program was flexible enough to suit the needs and interest levels of the teachers in attendance.

1. Workshop for classes of so-called "brain injured" educable students.

   This workshop was based on the assumption that a teacher can develop an instructional program for young educable children with marked perceptual, verbal, and/or social deficiencies through the use of a tutorial approach and modification of commercial materials. The workshop included the following content:

   a. Demonstrations of the adaptation of commercial and/or teacher-made materials to each child's level of functioning.

   b. A study of the sequential presentation of instruction by way of concrete teaching aids.

   c. An analysis of procedures for assisting hyperactive distractable children into the behavioral patterns demanded by a classroom setting.

   d. A structured classroom program consisting of academic and social skills.

   e. An analysis of relevant instructional materials at a readiness level of performance.

   f. Group assessment of materials unique to the so-called "brain injured" educable mentally retarded and those materials suited for all types of educable children.

   g. Host teacher's description of total special education program of her school district and unique functions of her class to prepare children in transition from regular to special classes.

   h. Group discussion of the advantages and disadvantages of a tutorial approach.

2. Workshop for classes containing both primary and intermediate level educable students (C.A. range 8-13).

   This workshop was held on the assumption that classes composed of both primary and intermediate level children can be organized and instructed to solve social and/or academic problems in an independent fashion.

The following content was provided:

a. A demonstration of organizational and procedural methods for evolving a classroom program based on the social learning curriculum through (1) selection of yearly theme, (2) designation of related units based upon life problems, (3) methods of initiating program and maintaining continuity throughout year, (4) development of student committees and organizational structure, (5) matching student competency to student responsibilities, (6) development of student leadership roles, (7) enlistment of parental support, (8) correlation of academic subjects in problem-solving situations, and (9) other related topics.

b. An exploration and discussion of methods of introducing the inductive teaching method in a classroom with C.A. and M.A. range including the use of the method in academic and non-academic areas, employment of students as tutors and/or group discussion leaders, and enhancement of experiential and verbal abilities for discussions.

c. A presentation of facilities and activities that enhance student independence as foreman and workers on group academic and/or crafts projects, organization of resource materials for independent use, role of class members in initiating new students into class routine, and development of proper attitudes toward independence and personal responsibilities.

d. An analysis of methods of using teacher-made materials to supplement commercial textbooks.

3. Workshop for two adjacent classes for primary or intermediate educable students.

This workshop was based on the assumption that through the pooling of commercial books, teacher-made materials, and teacher resources, adjacent educable classes for primary or intermediate level children can provide both quantitative and qualitative benefits not found in single isolated special classes.

The following content was provided:

a. A discussion of methods for pooling teacher resources, talents, and students for related and combined programs.

b. A determination of criteria for evaluating the suitability of commercial materials and books for primary and intermediate educable children.

c. An analysis of various commercial textbooks, workbooks, supplementary books, teaching aids, and materials along with teacher-made materials that are relevant to special education.

4. Orientation Workshop.

This workshop was designed to provide a transition from the preparation year to the first year. The content of this workshop consisted of:

The Project Director's review of:

a. The inductive teaching method.

b. The social learning model.

c. The procedures for the identification of significant social learning problems.

d. Presentation of the spring survey of probable social learning problems among the experimental classes.

e. Distribution of audio-visual and free materials resources lists for use in teacher planning.

5. Required Workshops in Curriculum Areas -- Social Learning, Language Arts, and Arithmetic.

After the initial training course and voluntary curriculum workshops had been completed, the program consultants worked closely with the teachers to implement the social learning curriculum and teaching method into the classroom educational program. Essentially the consultant's time was devoted to three major problem areas: (1) problems concerning grouping, diagnosis, and remediation in the skill areas of language arts and arithmetic, (2) teacher difficulties in the application of the life function content of the social learning curriculum, and (3) problems of classroom management as an indirect consequence of teacher inadequacy in academic and non-academic areas. The last problem was observed as a major difficulty of inexperienced teachers.

Then the director and program consultants developed three curriculum supplements comprised of both diagnostic and instructional content to meet these three areas of difficulty. During three "attendance required" workshops, the consultants were able: (1) to introduce the newly developed curriculum supplements in language arts, arithmetic and social learning; (2) to reinforce the essential concepts developed earlier in the preparation course; (3) to present the most up-to-date curriculum materials, teaching aids, textbooks and workbooks in each respective curriculum area; (4) to sustain the esprit de corps of the teachers; and (5) to provide for sharing and cross-currents of communication.

The following explanations and sample pages reveal the organization and content of each curriculum supplement.

First, a supplement was devised to enable the teacher to diagnose social learning problems on an individual and/or group basis in order to have a qualitative and quantitative profile of social learning problems. On the basis of this profile, the teachers made more accurate judgements in selecting the most appropriate units for the largest number of students.

The major elements of "Procedure for Assessing Social Learning Problems" are described below.

PROCEDURE FOR ASSESSING SOCIAL LEARNING PROBLEMS

Introduction

The social learning approach set forth in the Illinois Plan is based on the assumption that individuals experience a variety of problems which can be classified as belonging to one of the ten "life function" areas outlined in the guide. These problems will vary from child to child and from group to group. Therefore, planning a program which will successfully meet the most pressing needs of the greatest number of children in a specific class at a given time demands that this, or any other guide, be utilized in a highly selective manner. In short, it requires assessing each child's ability to function in each of the basic life function areas. It required isolating both individual and group problems. Unless such an assessment is made, deciding what problems should be dealt with in a social learning unit becomes either a mystical or a "hit and miss" affair.

The assessment procedure described below is intended to facilitate a systematic approach to the problem. It provides the "intensity quotient" or a quantitative measure of the severity of each child's problems and the frequency with which each of these problems are experienced by the other class members. The procedure enables the teacher to gain an overview of the parameters of the problem found in his class.

The problem analysis is the first stage in the total procedure for developing a dynamic social learning unit.

Mechanics for Assessing Social Learning Problems Related to the Ten Life Function Objectives of the Illinois Plan Curriculum Guide

I. Enter each child's initial in the top row of horizontal boxes found on each life function form.

II. Evaluate the degree to which each child has a problem in meeting each curriculum objective. Use the following three point scale:

2 - Almost Always a Problem

(The child consistently experiences difficulty meeting the objective and does not have adequate knowledge or experience to solve the problem.)

1 - Sometimes a Problem

(The child experiences some difficulty in a less consistent fashion and/or may not have the complete insight or experience to always reach the objective.)

0 - Rarely a Problem

(Under unusual circumstances the child will occassionally have difficulty meeting this objective.)

III. Certain problems stimulate thinking about other difficulties not listed by specific objectives but related to the general life function problems. Therefore, write down these additional problems and rate each student accordingly.

Thus these additional objective problems stimulate an appraisal of the children along dimensions not covered in the curriculum.

IV. After all additional problems have been listed, total each objective rating horizontally and enter the total in column at right; e.g.,

*Self Help
*Manners 2 1 2 2 2 2 2 0 0 0 2 = 15

---

*Taken from an actual analysis of a primary educable class used in a pilot trial of the procedure.

The horizontal total reflects a cross section of the class and reveals the frequency of intensity of the problems of the entire class in reaching this objective.

V. a. Vertically add all scoring totals in the right hand column to obtain a sum at the bottom of the page.

b. Repeat the process on each succeeding page.

c. Enter each page total on the last page and obtain an overall total.

e.g.

*Page 2 - Social Adjustment - Total B 79
Total A+ 112
Overall Total 191

VI. Count up the number of objectives containing problems - e.g., 20 (do not include objectives with only zero ratings)

VII. Obtain an intensity quotient by dividing the overall total by the total number of objectives with problem ratings of 1 or 2.

e.g.,

$$20 \overline{)119.0}^{\;9.5}$$

9.5 = intensity quotient for Social Adjustment

VIII. Repeat the procedure on the assessment form for each life function and obtain an intensity quotient.

IX. Compare the intensity quotients and determine the descending order starting with the highest quotient.

e.g.

*Social Adjustment	9.5
*Citizenship	8.7
*Physical and Mental Health	7.1
*Home and Family	6.1

These final quotients enable the teacher to quantitatively define the frequency and intensity of the problems for each life function area and facilitates a priority judgement as to the most relevant unit that will reach the largest number of children with the greatest amount of serious problems.

---

*Taken from an actual analysis of a primary educable class used in a pilot trial of the procedure.

X. The demonstration forms may show that the highest intensity quotient for Social Adjustment suggests that this may be the most appropriate first unit. However, a perusal of the Social Adjustment assessment form reveals such a wide variety of "two" problem ratings that it would be impossible to develop objectives to solve all these problems in one unit. Therefore, the teacher must delimit the number of objectives with his unit. The subgroupings of objectives, e.g., Self Help etc., tend to form clusters of associated objectives. Thus, the teacher must determine which additional objectives are related to the specific objectives. Then, she can compare subgroupings to pick the most crucial subgrouping of problems. For example:

		Total
	I. - Sharing	46
Additional Objectives listed as problems:	- taking others' property without permission	6
	- poor work habits	11
	- competing for teacher's attention	12
		75
	II. - Group Relationship	42
	- noisy in halls and bathroom	9
	- distracts group	5
	- poor sportsmanship	8
	- refuses to cooperate with team captain	9
	- unable to pick a side and designate responsibilities	9
		82

Normally, the quantitative differences would indicate the proper cluster. However, the sub-objectives of Sharing and Group Relationship are so quantitatively similar that the teacher can make a clinical selection based upon his qualitative assessment. Since several of the objectives in listening and talking will be covered in the language arts periods, the "II - Group Relationship" objectives became the choice for the first unit. Please note that this technique is only applied when all the objectives cannot be covered in a single unit.

XI. Now that the assessment process has enabled the teacher to pinpoint the most serious cluster of problems, she is ready to evaluate the specific problems of the children in meeting these objectives.

At this stage, the teacher is trying to identify the problems at the most specific and operational level rather than at the abstract level of the objectives, e.g., "failure to cooperate as a follower." The individual differences of the group, as expressed by a "one" or "two" rating, must be delimited into operational problems in which the teacher can work to affect a behavioral change.

Essentially the entire life function approach involves the following steps:

(1) Identification of individual problems in terms of the intensity and frequency of their occurence.

(2) Determination of common class problems in each life function area.

(3) Isolation of the most critical life function problems which are based on the quantitative intensity and frequency of common class problems.

(4) Translation of the life function area problems into their appropriate environmental levels (teaching units).

(5) Employment of the environmental level analysis in spelling out the specific objectives and content of an appropriate social learning unit.

(6) Correlation of knowledge area subjects and social studies content to meet the unit objectives.

Next, a curriculum supplement for the language arts was developed to aid E teachers in making cogent observations of levels of language skill development. The supplement also provided treatment procedures for language skills.

Generally, the supplement was divided into four sections representing the language areas of:

1. listening
2. speaking
3. writing
4. reading

Each of the four language areas was divided into two parts -- (a) diagnosis and (b) treatment.

To give the teacher a general overview of the four language areas, a Language Behavior Checklist was provided. The checklist enabled the teacher to make gross language evaluations on each child. To define the gross language evaluations the manual offered specific informal tests which the teacher could administer.

For each child in the class the teacher was given a diagnostic manual. In it the teacher could assess aspects of the child's language development. As the teacher made language analyses, she could begin to group children for instruction on a specific skill deficit basis.

Sample pages (1) and (2) are taken from the "Language Arts Skills Program Manual." Page (1) shows informal diagnostic tests for assessing aspects of auditory discrimination. Page (2) lists treatment activities for remedying skill deficits in auditory discrimination. These can be applied to individuals, small groups, and large groups (SAMPLE PAGE 1).

Test B Discrimination of Initial Sounds (Diagnosis)

Directions:

1. Turn child's chair away from you so he cannot see your lips.
2. Say: "I am going to say some pairs of words. Sometimes the words will begin with the same sound. Sometimes they will begin with different sounds. You tell me whether they begin with the same sounds or with different sounds."

   Sample: cry - dog S D If the child makes an

   boy - baby S D error, correct him.

3. Analysis: Note the nature of the child's errors. Determine whether the child is having difficulty with initial vowels or consonants and which particular initial sounds are giving difficulty.

(1)	pet - bear	S D	(11)	voice - board	S D
(2)	at - eat	S D	(12)	ice - it	S D
(3)	ten - duck	S D	(13)	read - rode	S D
(4)	open - over	S D	(14)	old - use	S D
(5)	kit - kite	S D	(15)	man - news	S D
(6)	up - use	S D	(16)	apple - end	S D
(7)	goat - corn	S D	(17)	tip - take	S D
(8)	eve - earn	S D	(18)	ask - it	S D
(9)	money - me	S D	(19)	sun - zebra	S D
(10)	ice - each	S D	(20)	odd - eve	S D

Analysis:

Test C Discrimination of Final Sounds

Directions:

1. Turn child's chair away from you so he cannot see your lips.

2. Say: "I am going to say some pairs of words. Sometimes the words will end in the same sound. Sometimes the words will end in different sounds. You tell me whether they end in the same sound or in different sounds."

Sample: see - dog S D If the child makes an error,
can - fun S D correct him.

Sample Page 2
From "Language Arts Skills Program Manual"

LISTENING (TREATMENT)

Auditory Discrimination

In general, any of the diagnostic tests will serve as models for developing exercises to treat auditory discrimination difficulties. In addition the following list of activities is offered to help you teach auditory discrimination skills. The list is arranged from the gross to more refined skills in this area.

1. As the children to close their eyes. Have one child speak and ask the other to tell who has spoken.

2. Have the children close their eyes. Tap on the wall, radiator, blackboard, etc. Ask the children to tell what you tapped.

3. Tap twice softly and once loudly. Ask the children to tell whether the first tap was loud or soft. Vary the tapping sequence and continue the questioning.

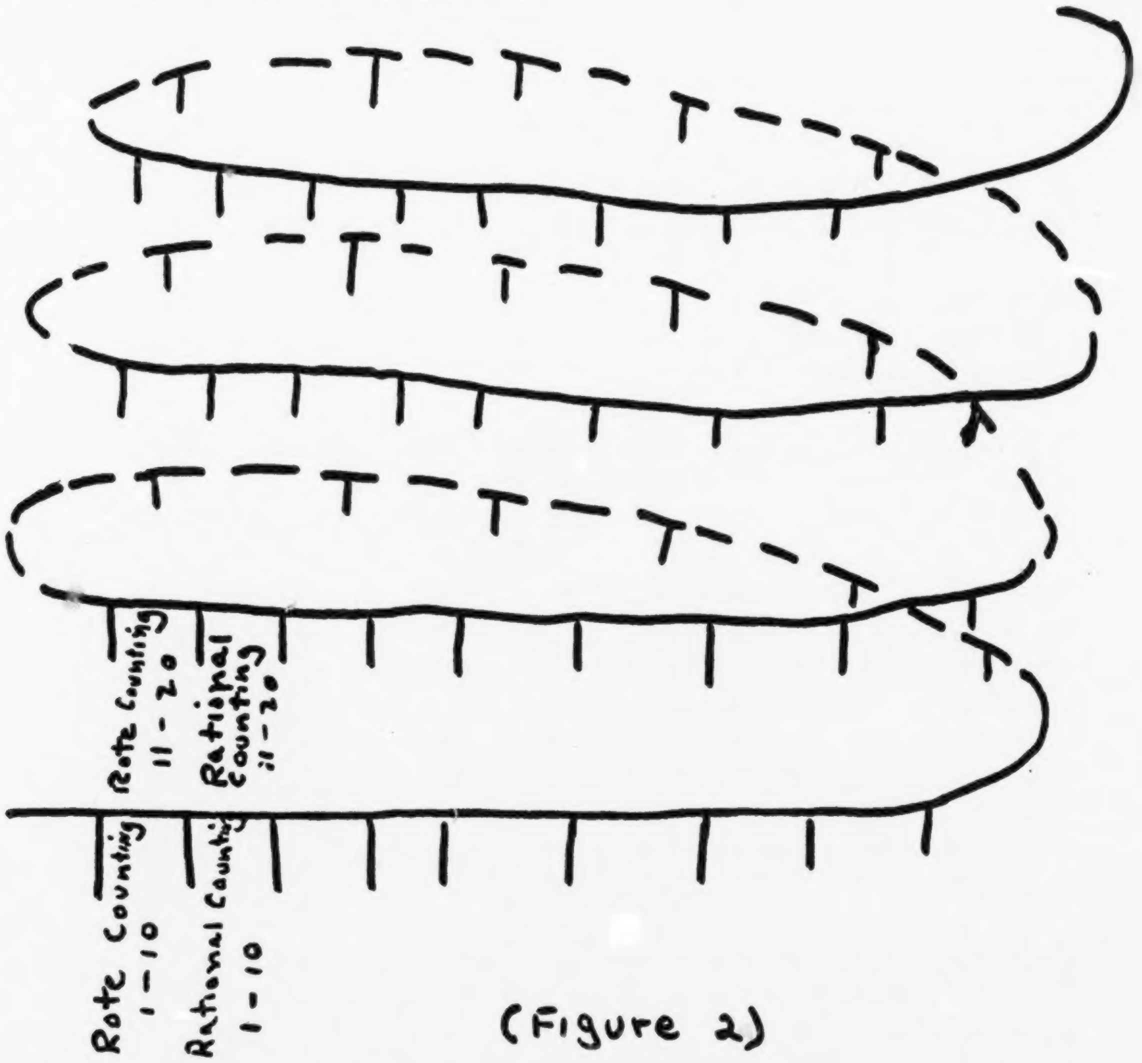
4. Have the class or a small group close their eyes and be as quiet as possible. As them to listen for and remember all the sounds they hear inside or outside the room. After thirty seconds have the children report on the sounds they heard. Have them reproduce the sounds and indicate the location of the sound source. Increase the length of listening time as the children demonstrate the ability to attend for longer periods.

5. Tell the students that you will pronounce a word. They are to listen carefully and think of any word that begins with the same sound. Examples: look, like, lone, lost. Use other initial sounds. Begin with consonant sounds and work toward vowel sounds.

6. Have the children submit words based on some structure. Example: There are many things to each which begin with the same sound as these words -- came, card, cut. (Emphasize the initial sound.)
   Other questions may be posed about things to wear, names of animals, names of children, street names, names of flowers. Vary the initial sounds as needed.

7. Repeat activities #5 and #6 using medial and ending sounds as variables. (long o, a, e, etc. short vowel sounds.)

Finally, a curriculum supplement was constructed to aid the diagnosis and teaching of arithmetic skills and concepts. The supplement was based upon a helix type model which illustrates the reoccurence of each arithmetic skill at higher levels of conceptualization and operation (Figure 2).


Rote Counting 11 - 20
Rational Counting 11 - 20
Rote Counting 1 - 10
Rational Counting 1 - 10

(Figure 2)

Thus, arithmetic skills can be seen as analogous to building blocks, whereby each separate skill is a prerequisite or foundation upon which further skills or concepts are developed.

The position and order of presentation of the general content of each skill was organized and presented as an "Overview of Arithmetic Skills" (partially reproduced upon sample page 3).

The "Overview" was composed of ten levels of ascending complexith and further divided into the fourteen skill arithmetic areas of: a) readiness, b) rote counting, c) rational counting, d) number recognition, e) number sequence, f) number writing, g) simple grouping, h) place value, i) addition, j) subtraction, k) multiplication, l) division, m) simple measurement and n) problem solving. Within each skill area the major concepts of facts were presented in a vertical column according to increasing levels of difficulty. Thus, the "Overview" could be employed as a road map since the major concepts were placed in perspective as they were related to each other. Furthermore, the "Overview" could be used as a guide for the accompanying "Sequence of Arithmetic Skills Manual" (SASM). The four books of the SASM contained a very detailed series of teaching plans that corresponded to the organization of the content on the "Overview."

The SASM was organized to present each skill area in one section to allow the teacher to discover the interrelationships and totality of all the facts and concepts. However, the teacher develops the arithmetic concepts in a horizontal left-right progression, closely following the helix-type model. First, he teaches all the content found on the readiness level. Then he moves to level one, proceeds across level one, moves back to level two, and repeats the same procedure. In this way, the content of each skill area is presented in a manageable amount and inter-related to the next concept in the adjacent skill area. Once all content of the

Sample Page 3
Partial Representation of

"OVERVIEW OF ARITHMETIC SKILLS"

			Skill Areas	
I Levels of Complexity	II Rote Counting	III Rational Counting	IV Number Recognition	V Number Sequence
10				
9				
8				
7				
6			D. Extend Rapid identification of Number Symbols Beyond 10-100	E. Counting by two's fives - tens
5			C. Identification of written Number Names 1-100	D. Beyond Teen Numbers
4		D. Counting by two's - fives tens	B. Rapid Identification of Symbols 1-10	C. Teen Numbers
3	B. Beyond Teen Numbers	C. Association of Verbalized Numbers and Quantity	A. Association of Number Symbol and Quantity	B. One to ten
2	B. Teen Numbers	B. More or Less		A. Before and After
1	A. 1 - 10 etc.	A. Introduction 1. Types of Counting 1 - 10 and Beyond		
I Readiness	A. Form 1. Concrete a. Between Shapes (3D) b. Between Shapes (2D) c. Within Shape	Discrimination 2. Abstract a. Between Shapes b. Within Shapes	B. Visual 1. Size Estimation a. Object b. People	Discrimination 2. Assessment

same difficulty is taught, the teacher develops the next higher level of conceptualization.

Sample pages 4 and 5 below were randomly selected from the SASM to show the specificity of the content as well as the organization of teaching plan required to present a concept. In order to provide adequate reinforcement in each stage, a large number of activities were provided. The teacher had the option to select as many of the most appropriate ones as she considered necessary.

The teachers received training in use of the overview for diagnostic testing and in ways to supplement the commercial textbook series and/or the Illinois Plan Guide with the new SASM.

In summary, the combination of inservice training sessions, materials workshops, and curriculum supplements to the Illinois Plan constituted the type of content training presented to the E teachers.

IX. ADDITION
D. Basic Addition Facts
2. Number Families

Sample Page 4

PRIMARY STAGE

TEACHER PREPARATION

Prerequisite Skills:

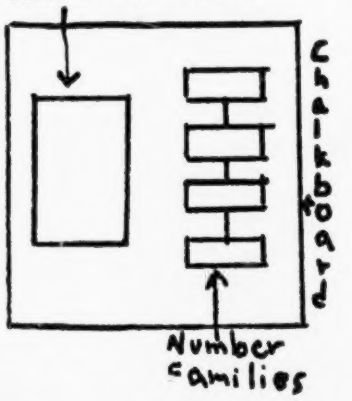
Ability to add number facts and recognize the components which make up each set of facts.

Organization of Children:

Form a horseshoe circle around the hundreds chart.

Physical Setting:

A Hundreds Chart



Note: Subtraction facts may be taught separately. However, since the process of subtraction is an inverse process of addition, the opposite subtraction facts can be developed simultaneously or slightly after the mastery of a particular set of facts.

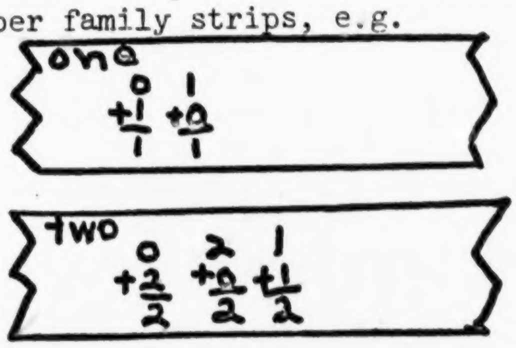
STRUCTURE AND INTRODUCTION

Concept:

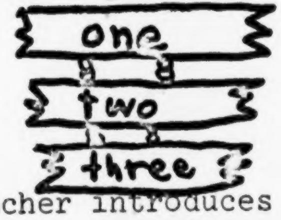
A number family represents all addition facts for that number.

Presentation:

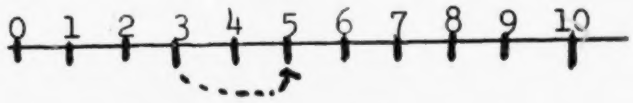
1. Using the hundreds chart, the class helps teacher construct number family strips, e.g.



Each number family is written on an oak tag strip and hung beneath previous strips, e.g.



2. Teacher introduces a number line to check facts.



e.g. 3 + 2 = 5

Materials:

M_9 Double Value Flash Cards

H_{11} Abacus

EXPANSION AND MASTERY OF LEARNING SKILLS AND CONCEPTS

Restatement of Concept for Children:

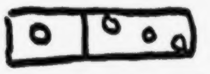
Each number family stands for the different ways we can add numbers to get that number as a total.

Reinforcement:

1. Teacher elaborates upon facts for each family by:
Presenting facts by
a. shape configurations
b. object configurations
c. horizontal and vertical algorisms

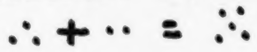
e.g.
a. 0 0
b. * *
c. 1 + 1 = 2
d. $\begin{array}{r} 1 \\ +1 \\ \hline 2 \end{array}$

2. Children find dominoe blocks which illustrate a fact and work out fact with number symbols.

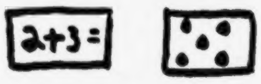


= 1 + 3 = 4

3. Facts can be displayed by different dot configurations.



4. Use Addition Perception cards. Match algorism and correct total.



5. Use Flash cards with configurations on one side and algorisms on the other side.

6. Manipulate abacus to form various addition facts.

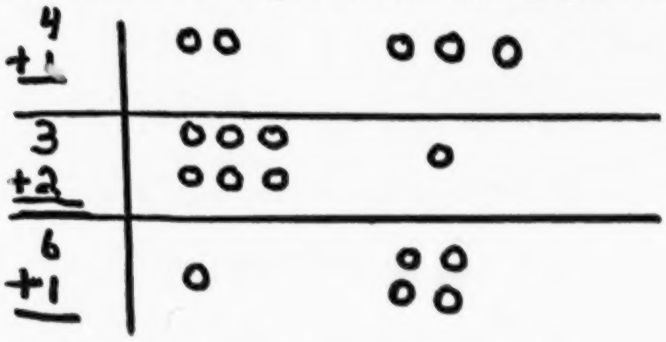
7. Try checking algorisms by using number line.

SECONDARY STAGE

REINFORCEMENT FOR GENERALIZATION

Seatwork:

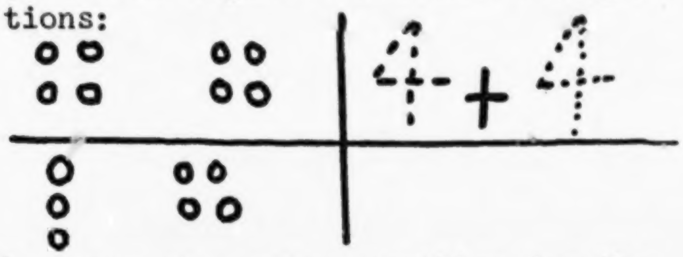
1. Match configurations and algorisms.



2. Complete algorisms:

1 3 2
+1 +1 +1

3. Write algorism to match configurations:



4. Make the number families for the following numbers:

3	
6	
5	

5. Give random group of facts on work sheet. Have children reorganize into number families.

Games: Addition War:

1. Each child turns over a number card. The first child to successfully add the two numbers get to keep cards.

2. Flash card baseball. Class divided into two teams. Teacher acts as pitcher by displaying flash card. If child adds correctly he gets a base hit; if he makes a mistake he is credited with an out. Variations after adding correctly, child must name number formally which contains fact.

TERTIARY STAGE

APPLICATION OF GENERALIZATION FOR PROBLEM SOLVING

Classroom:

1. Class is divided into two groups. Children are each given a consecutive number card (e.g., if there are ten children there would be two sets of 1 - 5). Person who is "IT" calls out a problem using numbers held by children, e.g. 2 + 8 = or 4 + 1 = . Pupils holding either number stand. First on with correct answer either gets a point or switches places with "IT."

2. Letter carrier - Each child is given a number. Letter carrier has problems written on cards, e.g. 4 + 3 = __ or 4 + __ = 7. Carrier must work out problem and select child holding the proper total as living at the proper address. If child at address can prove that the answer selected by postman's incorrect and letter was delivered to wrong address, he becomes letter carrier. If both are wrong and another child picks up mistake, he is made letter carrier.

Games:

3. "Who Am I?" Child says, "I am three and two. Who am I?"

4. Street Car - chairs are arranged in two rows. One child acts as a conductor and other children are seated in chairs. Conductor asks question that is considered as a "fare" (e.g., "7 is 4 and ___." If correct answer is given, fare is paid. If wrong answer is made child must get off for failure to pay fare. Children may regain entry by correctly answering problem missed by another child. If conductor fails to discover a wrong answer, another child can correct him and become the conductor.

Teacher can vary game according to age and interest of group, e.g. airline hostess - railroad conductor, etc.

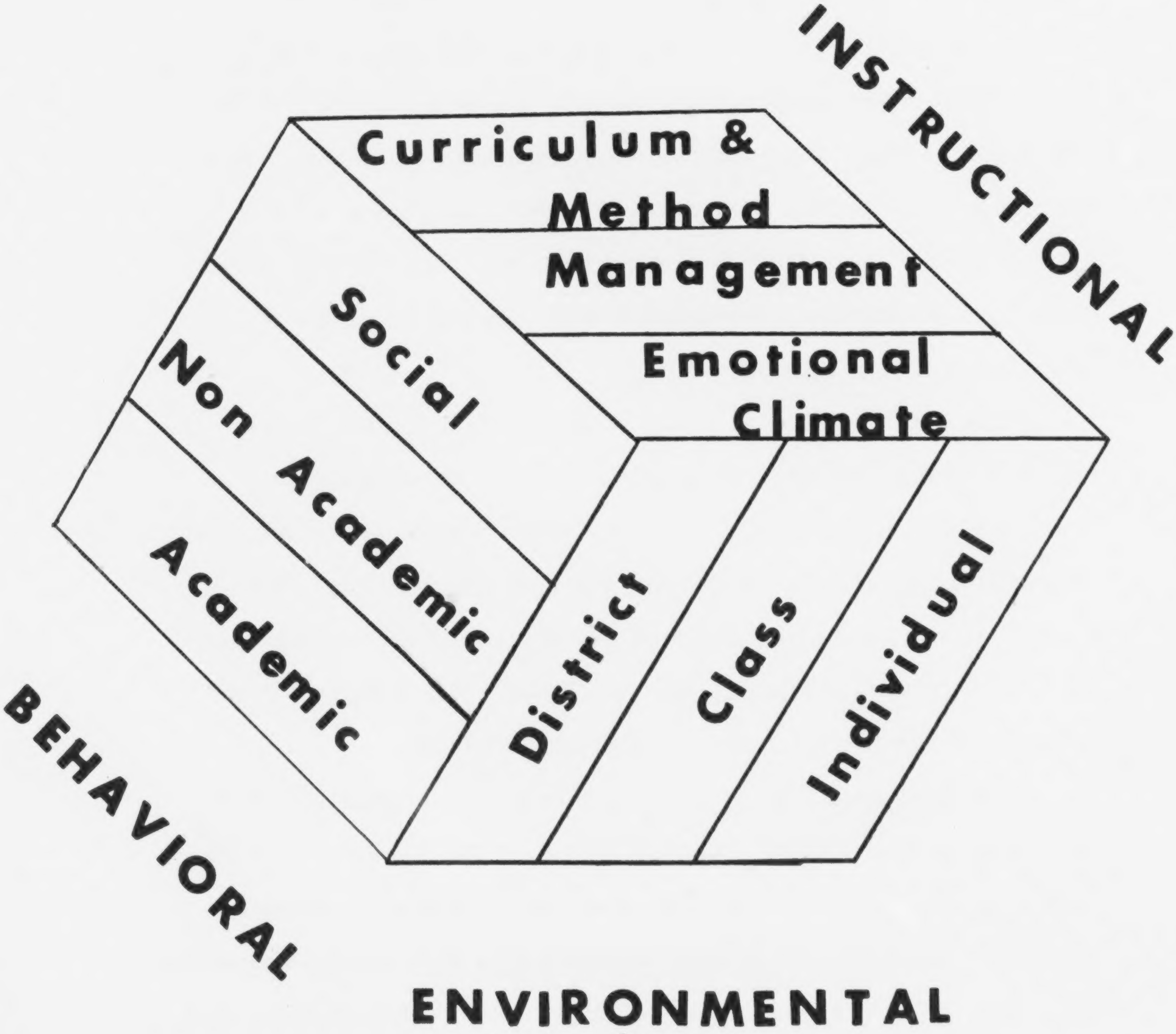
APPENDIX C

Role of Program Consultants

The major responsibility of the program consultant was to function as a project "trouble shooter" and to assist the E teachers in the adoption of the social learning curriculum and teaching method to fit the circumstances found in their classrooms. The consultant's *modus operandi* was the "helping teacher" partnership, rather than an autocratic relationship usually found in a supervisory approach.

However, before the E teachers could implement the curriculum and method into their programs, they called upon the consultants to help resolve a multitude of non-project procedural, organizational, and/or personal difficulties that had been interferring with their educational programs. Implicit in the consultant's functions was the objective of encouraging and/or affecting teacher chance in order to reduce these problems and to pave the way for the successful incorporation of a social learning curriculum and teaching method.

The consultants operated from the conceptual frame of reference that any classroom problem could be analyzed among three dimensions. Figure 3 illustrates the hypothesized parameters of classroom problems. It is to the resolution of these problems that the teachers and consultants mutually addressed themselves.


INSTRUCTIONAL
Curriculum & Method
Management
Emotional Climate
Social
Non Academic
Academic
District
Class
Individual
BEHAVIORAL
ENVIRONMENTAL

(Figure 3)

The Instructional Dimension is comprised of three types of teacher performance. "Curriculum and Methods" refers to the lesson content and how the content is presented. "Management" refers to organization and execution of all aspects of the daily program. Finally, the "Social-Emotional Climate" refers essentially to the effects of the teacher's feelings, opinions, attitudes, and expectations as they relate to the teacher, the students, and/or the school. These three aspects are not mutually exclusive. Their interrelationships must also be studied when considering the impact of the instructional dimension upon a problem. That is, what effect does teacher behavior or performance have upon the existence or creation of a classroom problem?

The Environmental Dimension is the specific element of the physical context in which the problem exists. Proceeding from the whole to its parts, the "District" aspect refers to the total school district and its concomitant policies and practices. The "Class" aspect refers to the cumulative effects of all the members of a special class. Finally, the "Individual" aspect refers to one student and how his performance affects the problem.

The Behavorial Dimension refers to the type of problems that influence various student classroom actions. The "Academic" aspect refers to all systematic learning traditionally placed under this heading. "Non-academic" aspects include music, art, physical education, etc. The "Social" aspect refers to interpersonal relationships, self control, and/or discipline.

Within this model, the teacher and consultant can start to isolate the relevant dimensions of any problem. An illustrative example of a classroom problem concerned Miss M., a second year teacher, who was unable to complete an entire inductive teaching sequence in social studies. After a lengthy discussion, the consultant uncovered the parameters of the problem as illustrated by Figure 4 below.

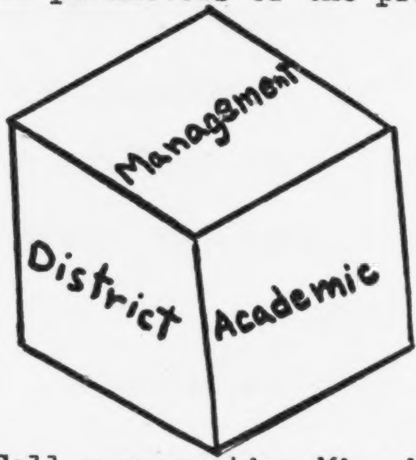


Figure 4 Cell representing Miss M's classroom problem.

Along the Instructional Dimension, Miss M had a positive attitude toward the students and demonstrated some competency in the use of the experimental curriculum and methods. However, her organization of the classroom setting or Management Dimension was haphazard. She allowed known trouble-makers to sit together. Their desks were too closely placed on one corner of the room. She kept her back to the seatwork groups during the reading lessons. Her teaching approach stressed individual tutoring; but she failed to provide sufficient independent seatwork for the unoccupied children during the tutoring period.

From the Environmental Dimension the problem had District connotations. The class contained a disproportionate number of hyperactive and aggressive children when compared to other special classes in the school building, and the teacher could not exert any control over the composition of the class membership. This condition reflected a planning and administrative deficiency at the school district level.

Finally, the *Behavorial Dimension* of the problem was of an *academic* nature. The teacher could not finish the social studies lesson without disruptions from the hyperactive children. From this perspective all were non-readers who could not keep up with the oral reading in the social studies lesson, and so expressed their frustration during the discussion period.

Steps were taken to remedy the situation. The consultant helped the teacher improve her *management* techniques by rearranging the seating plan, respacing the desks, and having the teacher face the seat work groups during her reading period. More seat work was introduced to reduce the amount of free time. From the *academic* aspects, the children's reading problems were reduced by increasing their reading periods and the content of their reading lessons. Furthermore, they were given non-reading projects to complete as part of the social studies lesson. However, as a last resort, the Director of Special Education had to be contacted due to the overbalance of hyperactive children. He was able to shuffle students in the three special classes until a more equitable arrangement was achieved.

Because one of Miss M.'s main problems was being resolved, the consultant was able to return to promoting the utilization of the treatment variables. He then could shift the focus of the teacher-consultant conferences to the content and suitability of her social studies program.

Miss M's problem was fairly simple to analyze. However, the interdependent relationships between dimensions illustrates the need to continue the dimension analysis of even more complex situations and difficulties in hopes of unwinding more intricate relationships.

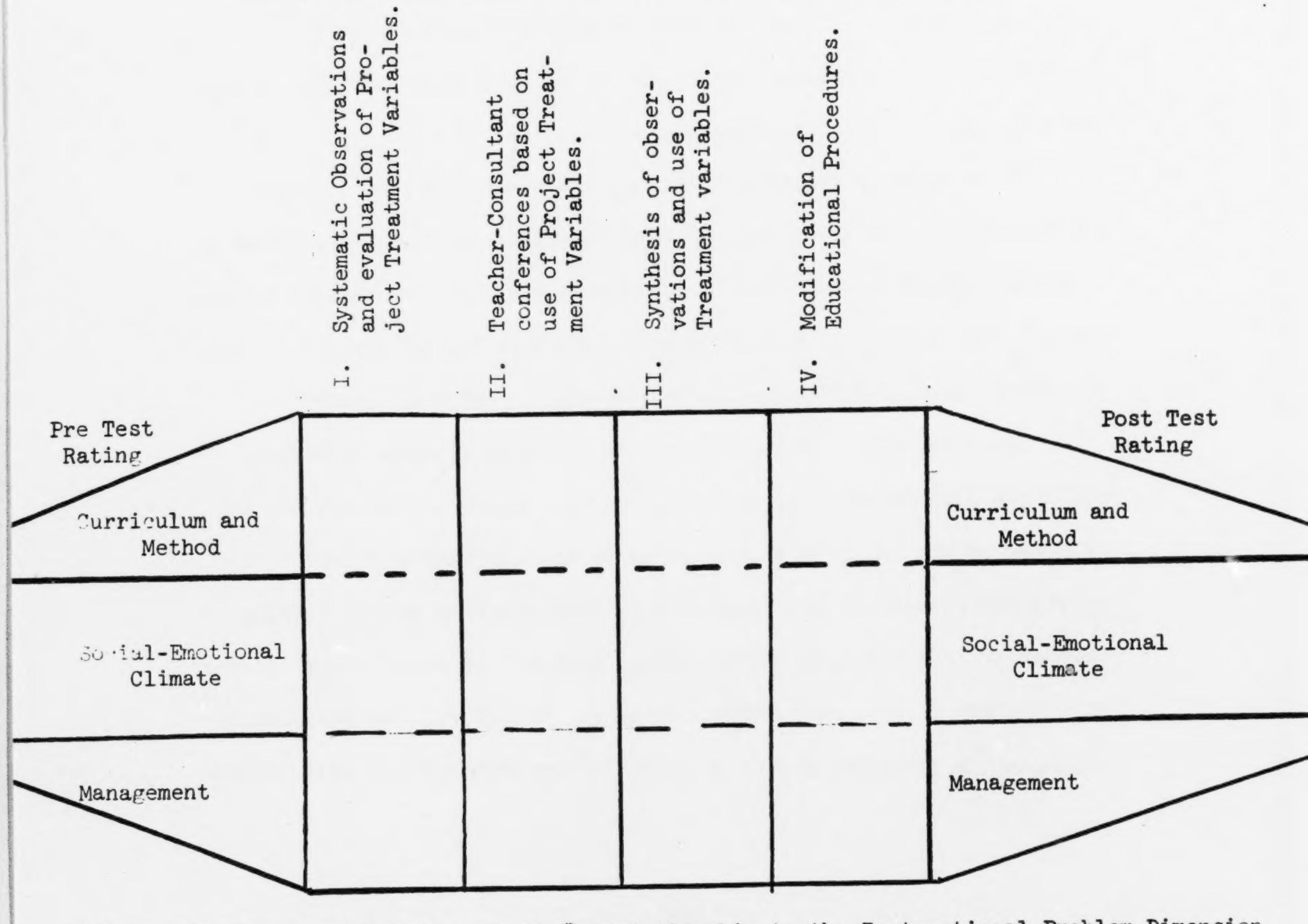
The teacher can influence student behavior and thinking by altering her behavior along any three of the problem dimensions. With the proper blending of teaching strategy or method and the appropriate content, the teacher can convey the essential information necessary to change children's behavior. By manipulating the children's movement and their physical surroundings, the teacher can greatly influence group cohesiveness, disruptions, conservation of materials, and many other phenomena which cause problems. Finally, the teacher's reaction and encouragement can have a motivational influence upon the students. If the teacher can conceptualize the problem's parameters, flexible alternatives can be applied to solve educational problems and to change student behaviors.

It is equally feasible to reduce classroom problems through administrative practices such as team teaching; the use of resource teachers, and/or by employing procedures along M.A. or academic skills lines. The behavioral dimension of the problem can be altered by the introduction of a different curriculum and/or course of study.

However, only a school system can initiate changes to affect all three dimensions of classroom problems. Since it was beyond the province of the study to recommend major administrative and/or curricular revisions, the main area of concentration was to develop teacher or instructional change among "typical" educable class teachers in a variety of regional school settings. Therefore, the consultants attempted to interact primarily with the teachers and not with administrators and/or policy makers such as the Board of Education or the State Department.

As the consultants continued to work during the first year of the project, a definite plan of operations emerged. Figure 5 illustrates the operational model of affecting teacher change through consultative services.

Within Figure 5, the consultants have four major alternatives that vary according to the degree of consultant involvement and the degree of actual instructional change required. An analysis of each step will reveal the procedures and practices of the program consultants as they attempted to help create or encourage teacher change.


I. Systematic Observations and evaluation of Project Treatment Variables.
II. Teacher-Consultant conferences based on use of Project Treatment Variables.
III. Synthesis of observations and use of Treatment variables.
IV. Modification of Educational Procedures.
Pre Test Rating
Curriculum and Method
Social-Emotional Climate
Management
Post Test Rating
Curriculum and Method
Social-Emotional Climate
Management

(Figure 5) Consultant Service and their Relationship to the Instructional Problem Dimension.

All activities start from the mutually agreed upon goals of employing the Illinois Guide Curriculum (Goldstein and Seigle, 1958) and the inductive teaching method as the treatment variables in the E classes.

As Step I, the consultants maintained bi-monthly visitations to each of the E classes. As the consultants observed the teachers and students interactions, they kept a written anecdotal log of the key problems, major activities of significant verbal exchanges and of important background information. Secondly, the consultants maintained a series of one-half time samples of the amount of instructional time and the amount of non-instructional time. At the end of each visit, the consultant evaluated each lesson on the Lesson Observation Summary Sheet (LOSS -- shown in Appendix E), using their anecdotal records and time samples. Due to the excessive amount of paper work the LOSS form was revised during the second project year. Instead of the LOSS, the Observers Summary Sheet (OSS -- shown in Appendix E) was devised to record a summary of the entire observation. The form included a narrative description and a summary check list to rate the teacher on the use of curriculum, method, and learning atmosphere. A seven-point scale was used. The form had provisions for a qualitative analysis of the instructional materials. A qualitative analysis of the components of the inductive method was also provided.

Regardless of the type of recording form, the anecdotal notes, time sample analysis, and/or the rating forms provided many topics and problems for discussion in the following step -- the teacher-consultant conference.

During Step II, conferences based on previous goals, major emphasis was placed upon the specific ways to incorporate the curriculum and teaching methods into the program. It was at this stage that major independent problems or difficulties related to the curriculum and method were exposed. Within the reciprocal helping teacher relationship, many alternatives, ideas, and criticisms were candidly exchanged. This dialogue was qualitatively different from the directive type that might occur between teacher and supervisor. Since the consultants were not members of the administrative staff, the teachers responded more freely as the rapport developed with the project staff. Secondly, the emphasis upon testing the efficacy of the curriculum and method enabled the teacher to present constructive information related to the treatment approach. For instance, their evaluation of the curriculum was an impetus for the development of the three related curriculum supplements. Consequently, the teacher-consultant conferences generally resulted in a mutually agreed upon course of actions to solve the teacher's difficulties.

To provide a consistent follow-up on procedure, the consultant developed a continuous Problem Flow Chart, shown in Appendix E. As seen on the flow chart, the essential problems were identified and the main points of the discussion and recommendations were recorded and dated. On the next visit the consultant obtained a progress report on the efficacy of the specific recommendations. In other situations the shortcomings of the recommendations were noted and a new modification was generated through a follow-up discussion between the teacher and consultant. The modification was then initiated and a subsequent follow-up discussion and evaluation would ensue. The process was repeated until the problem could be resolved.

The technique was an effective approach with receptive teachers. However, in certain instances, the teacher recognized no problems and felt that the consultant's comments were irrelevant or inconsequential. Diplomancy and tact were consistently employed as the consultants tried to establish rapport and develop the type of relationship in which the teacher would feel secure enough to discuss his shortcomings and problems. In other situations the teacher did all he could within an instructional framework. Ultimately, he would be forced to submit the problem to the psychologist and/or director of special education for administrative assistance.

Step III. Entitled "synthesis of observations and use of treatment variables," was the next logical step. In cases where the teacher's attention had been focused upon the problem, but where he had failed to carry through the suggestions, or where he did not understand how to incorporate the recommendations, the consultant tried more active approaches to effect teacher change. One valuable technique was to take over the class and demonstrate how the technique could be employed with the present class members. This technique was particularly successful in demonstrating the inductive type questioning and restructuring. Curriculum suppliments for diagnostic purposes were also demonstrated.

Another technique involved joint planning meetings with all the project teachers from the same district. In these meetings, the life function problems were identified and subsequent unit content was suggested and organized to provide continuity between classes. Another active consultant service was the provision of a circulation library of film strips and curriculum materials.

The effectiveness of the third stage was vitiated by the lack of sufficient meeting time. Consequently, demonstration lessons and planning sessions had to be used sparingly when the Stage II conferences did not produce the expected changes.

Step IV. Modification of the education program phase, was instituted when the goals of the three previous stages did not materialize with certain teachers.

While the true effectiveness of the program consultants has not been measured, it appears that consultative services had beneficial effects for the special class teachers. In lieu of systematic supervisory visits, the isolated special class teacher relied upon the consultants as a source of professional information, stimulation, and encouragement. The candid working relationship enabled the consultants to utilize teacher criticism to improve training techniques, to refine the curriculum, and to improve the selection of instructional materials.

APPENDIX D

Manual of Instructions for the Tape Recording Classification System

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INTRODUCTION

This classification system was designed to determine whether the experimental and control teachers in FOE D-016 were using Goldstein's inductive teaching method. The construction of this classification system was influenced primarily by Goldstein's conceptualization of the inductive teaching method and secondarily by the Gallagher-Aschner Classification System as well as Bellack's system. Anyone intending to learn this classification system is required to read Goldstein's FOE D-016 demonstration proposal, the Gallagher-Aschner Classification System Manual, and Bellack's Manuscript "Language in the Classroom".

This classification system differs from most others because it has a set of categories for teacher statements and another set for student utterances. This dichotomy was made because of the different roles teachers and students occupy in the classroom communication process. Secondly, this classification system was designed to make sequential analyses or discover patterns of teacher and student categories which seem to "go together". Thus, the categories for teacher and student utterances can best be comprehended in their inter-relationships to each other.

The following procedure will be used to analyze the tape recordings made for the Goldstein study:
(1.) Once a month a 20 minute tape recording will be made for each experimental and control teacher. Different subject matter areas will be recorded each month. The same classification system is used for all subject matter areas.
(2.) The tapes will be transcribed and typed into tapescripts.
(3.) Two judges will independently code each tapescript without knowing if an experimental or control teacher's performance is being analyzed. These judges will have undergone supervised training on five practice tapescripts. The following steps will be involved:
    (a.) The judges will break the tapescripts into units. A unit is equivalent to one of the categories of this classification system. A unit may vary in length from one word to many paragraphs. After unitizing the tapescripts, the judges will code them.
    (b.) After categorizing the tapescripts the judges will compare their results. In cases of disagreement the judges will resolve the differences. If this is not possible, a third judge will be consulted.

(c.) Periodically several hundred units will be randomly selected to obtain an index of inter-judge agreement.

The next section presents descriptions and examples of the four teacher categories and the five student categories. The third section presents unitized tapescripts and completed record sheets. Finally, a summary sheet of category abbreviations and definitions is provided.

TEACHER CATEGORIES

From the point of view of this classification system the teacher has four major roles: (1.) to structure the classroom situation so that students will perform academically (i.e., the teacher must provide the stimuli to which the students are to respond) (2.) to react to the student's academic performance after it has been emitted (i.e., to provide feedback for the student's responses) (3.) to present information to students (4.) to manage the routine classroom affairs which are not directly related to academic content. It can be seen that the first three roles are directly involved in the teaching-learning process, while the fourth sets the stage so that this process can occur. These four roles are the same as the four major categories for teacher utterances.

1. Structuring (st).

The purpose of these utterances is to structure the classroom situation so that the students will respond. Structuring utterances only refer to responses involving academic content. Therefore, a question such as "Where is your pencil?" would not be classified in this category. All questions, commands, and requests requiring the student to respond academically fall into this major category. This category is sub-divided into two secondary categories:

A. Structuring for memory responses from students (St-m).

This type of structuring requires that the student only use memory or cognition or perception to respond appropriately. No use of a higher level mental process is requested by the teacher.

Examples of such teacher utterances are:

"Who discovered America?"
"Read the first line there."
"What's 2 and 2 ?"
"Draw a line under the picture of the garage."
"How do you spell March ?"
"What's the sound at the beginning of the word big?"

In a reading lesson structuring for reading, writing, spelling, memory questions following reading, and phonic analysis of words would be categorized in St-m. In an arithmetic lesson structuring for counting, simple adding, subtracting, and place value labeling would be coded here. All questions or requests for fact stating; review of previous classroom material; definitions; reading; writing; and spelling are coded in this category.

Although this category requires the use of no mental process other than cognition or memory, not all utterances in this category can be considered easy. For example, the question, "What is the formula for the Pearson Product Moment Coefficient of Correlation?" involves only the mental process of memory, and yet it is not a simple question.

In terms of Guilford's Structure of Intellect, this category encompasses questions, requests or commands for the students to use the processes of cognition and/or memory.

B. Structuring for integrative responses from students (St-i)

This second type of structuring requires that the student use a process other than memory and/or cognition to make his response. Questions, requests and commands in this sub-category require the student to utilize such processes as association, categorization, explanations, reasoning, generalizing, evaluation, make implications, inferences, etc. All such higher level mental processes are encompassed under the rubric of integrative processes. In terms of Guilford's Structure of Intellect these structuring moves would require the students to use the processes of convergent, divergent, or evaluative thinking.

Some examples of teacher utterances classified as St-i are:

"If John had 10 apples and he lost 3, how many apples does John have?"
"What is the difference between jobs for men and jobs for women?"
"Do you like your new book?"
"Why do you say you're not ready to quit school yet?"
"Name all the holidays you can."

In a reading lesson St-i utterances might be questions after reading a story which involve prediction, inference, etc. In arithmetic word problems in which the student must determine which mathmatical process to use and computation problems involving carrying or borrowing would be coded in this category.

Although structuring moves in this category require the student to use a mental process other than cognition and memory, not all st-i utterances are difficult. For example, the question "How are an apple and a peach alike?" is a simpler question than "What is the formula for the Pearson Product Moment Coefficient of Correlation?", and yet the former involves an associative process whereas the latter requires only the use of memory. It is imperative that the difference between St-m and St-i NOT be made on the basis of easy-difficult, but rather on the mental process which the teacher is requesting the student to use.

Also, when deciding upon the difference of St-m and St-i consideration should only be given to the mental process the teacher is requesting the child to use, and NOT what process the child actually produces. This differentiation should be kept in mind when coding so that when the teacher asks for the use of one type of process (e.g., St-i) and the child produces a response with another type of process (e.g., memory) this can be analyzed.

II. Reacting. (Re).

After the student has responded to the teacher's structuring for performance, then the teacher reacts to the student's performance. Statements are coded in this category if the student's response involves academic content. Reactions to non-academic student performance are not categorized here.

For example, if a teacher asks "Do you have a pencil?: and the student responds "Yes", then the teacher's reaction of "Good" to the latter would NOT be coded in this category because the student's response does not involve academic content. Utterances coded in the reacting category may be viewed as feedback. Reacting responses are sub-divided into four second categories:

A. Reacting responses that provide reinforcement (Re-R).

Statements providing positive or negative reinforcement for a student's previous response are classed here. Examples of positive reinforcement would be:

"Good thinking."
"Right".
"You did a nice job of reading today."
"I like the way you wrote your o's."

These statements would be coded as Re-r+. The plus sign after the category abbreviation denotes that positive reinforcement has been given.

Examples of negative reinforcement would be:

"That's not right."
"You can do a better job of reading than that."
"That's not how you spell girl."

These statements would be coded Re-r- to show that negative reinforcement was given.

Teachers often repeat or paraphrase the student's response without giving any positive or negative reinforcement. If this occurs, then code this as Re-rn to show that this is "neutral" reinforcement.

B. Reacting responses that require the student to evaluate his or another child's previous response (Re-E).

Examples of this secondary category would be:

"Is that how you spell horse?" (After the student has spelled it h-o-s-e).
"Is that right?"
"Is that what I asked you to write?"

These statements may follow a correct or incorrect student response; however, they more often seem to follow incorrect student performance.

C. Reacting responses in which the teacher corrects the student's previous incorrect responses (Re-C).

In these cases the teacher provides the right response after a student has responded incorrectly or inaccurately. Thus, these reacting responses can only follow incorrect responses by the student.

D. Reacting responses in which the teacher re-structures the situation (Re-st).

These occur after a student has responded incorrectly or inadequately or when there is more than one correct answer to the original question presented by the teacher. Re-structuring occurs when the teacher repeats or paraphrases the question she presented when she originally structured the class; when she adds more cues; when she clarifies the meaning of what she said previously; when she focuses attention on new and/or different perspectives, etc. Examples of this secondary category are:

"Look at that word again."
"I'll give you a hint. This word is a color name."(Said after student has read word blue as boy).
"Think of some more good names of dogs."
"Doesn't anybody in this room know what the janitor's job is?"

These are similar to structuring statements (both ST-i and St-m). The major difference between structuring and re-structuring is that the former presents a question, command, or request for the first time. That is, this question, command or request has not been responded to by a student previously; whereas, Re-st statements may present the same question, command or request buy NOT for the first time. In cases of re-structuring students have previously responded to the question, request or command.

III. Information (I).

These are statements in which the teacher gives facts or statements involving integrative processes. When the teacher gives an I statement she does NOT expect, nor does she want, a response from the students. When a teacher lectures, engages in a monologue, or answers a student's question her statements would be classed in the I category.

Examples of this class are:

"When you grow up you will get a job and you must be on time. If you're not on time, you'll get fired from your job."

"Columbus discovered America in 1492. He came with three ships. There were only Indians in America at that time."

In many cases the teacher gives facts before she asks a question. These facts are the foundation of the question to follow. If this is found, then the information is coded together with the question as structuring. If no question or structuring is found after the presentation of facts then this is coded as I.

The teacher's I statements may involve cognition and memory or higher level mental processes; however, in this category no distinction is made in terms of secondary categories.

IV. Routine (Ro).

This category involves utterances concerning non-academic matters. These may be questions, requests or statements. This major category is sub-divided into two sub-categories.

A. Management (Ro-m).

These utterances concern matters of managing the affairs of a classroom. These may be in the form of structuring (e.g., "Where is your pencil?") or in the form of statements (e.g., "We have no more blue paper left."). All statements, questions, commands, or requests referring to the management of classroom procedures are categorized here. Examples of this secondary class are:

"After gym we'll have our snacks."
"Did you bring a note from your mother?"
"Pass these papers out to each person Billy."
"Erase the blackboard Tommy."

B. Disciplining (Ro-d).

These utterances are a special type of management in which the teacher negatively reinforces children who are misbehaving. Examples of this are:

"Stop talking right now."
"Go sit in the hall until you learn how to keep your mouth shut."

Utterances in this category differ from Re-r- because the latter refers to negative reinforcement of academic performance by the student while Ro-d refers to non-academic content or misbehavior.

STUDENT CATEGORIES

I. Responses (Rp).

These are the student's responses to structuring or to reacting statements by the teacher. These student utterances can only occur after these two types of teacher utterances. Thus, a student's initial response to a teacher's structuring (St) would be classified here as well as his re-responding after the teacher has re-structured (Re-st), asked for an evaluation (Re-e) or given reinforcement (Re-r). Responses are only classed here if they involve academic content. This major category is sub-divided into two secondary categories.

A. Responses involving the use of memory or cognition (Rp-m).

These responses usually follow St-m from the teacher, but may follow St-i inappropriately. To make this reponse the student need only employ his cognitive or memory processes. Examples of this category are:

"Columbus discovered America."
"2 and 2 is 4."
(Reads from text) "Run Sally. Run. Run. Run."
"C-A-T". (spells cat).

All reading spelling, word analysis, and factual statements, would be classed here.

B. Responses involving integrative processes (Rp-i).

These responses usually follow St-i by the teacher, but may occasionally follow St-m. To make this response the student uses higher level mental processes such as reasoning, evaluation, association, etc. In terms of Guilford's Structure of Intellect the processes of convergent, divergent and evaluative thinking would be involved in making responses in this sub-category. Examples of this are:

"If Bill had 10 apples and he lost 3, then he has 7 left."
"I liked this new book because the little boy gets a baby dog and I like baby dogs."
"Apple and peach are the same because you eat apples and you eat peaches.

The additional coding of a plus (+) or a minus (-) is put after every Rp-m and Rp-i response to indicate if the response is correct or not.

II Evaluation (E).

These utterances always follow requests by the teacher for the student to evaluate a previous response. These previous responses may have been produced by the child making the evaluation or another child. Utterances in this category involve the student's making the actual evaluation of the response. Examples are:

> "That answer shouldn't be five, it should be six."
> "I didn't do this right."

III. Spontaneous remarks (Sp).

These are spontaneous questions, statements or commands not solicitated by the teacher. These have only to do with academic content. Spontaneous utterances are sub-divided into secondary categories.

A. Questions (Sp-q).

Spontaneous questions asked by the student of the teacher are classified here. For example:

> "Who's the president?"
> "Why do the astronauts go up in space?"

B. Statements (Sp-s).

Statements not solicitated or structured by the teacher and involving academic content are classed here. Examples are:

> "My brother has a book like this one."
> "Dutch people wear wooden shoes just like the ones in this picture."

Although spontaneous utterances are not directly asked for by the teacher, they are usually related to the ongoing discussion of the class.

IV. Routine (Ro).

These utterances do not involve academic content and refer to management or procedural affairs of the classroom.

Examples are:

"I lost my pencil."
"Can I have another piece of paper?"
"Do I have to do this in ink?"
"Billy kicked me."

V. No response (NR).

If a student says he does not know the answer to a question or if he does not respond then these are classed in this category. Also, confused and muddled responses are coded here.

ADDITIONAL CODING

An X refers to uncodable utterances because of mechanical difficulties or questionable transcriptions.

In some cases it is necessary to double code the same utterance. Language is flexible because it can be used for different purposes at the same time. To take advantage of this flexibility utterances that fit into more than one category are double coded.

SAMPLE TAPESCRIPTS AND RECORD SHEETS

Below are sample tapescripts of a Social Studies and Reading lesson. The slash marks on the tapescripts separate the units. The number above each unit are used to record the category on the record sheets which follow. If an utterance was produced by the teacher the category is written under the T column and if it was produced by the student it is written under the S column. The number after the word teacher on the record sheet refers to the teacher's code number and the initials after the coder refer to the judge.

SAMPLE SOCIAL STUDIES TAPESCRIPT

T: / O.K., what did we talk about on Monday? the different kinds of what?/

S: / Friends./

T: / No. / On Monday. Different kinds of what?/

S: / Neighbors./

T: / Not neighbors./

S: / Houses. /

T: / Different kinds of houses. / What did we say about different kinds of houses Randy? /

Randy:/ Farm house./

T: / Farm house. / And do you live on a farm? /

Randy:/ No. /

T: / No. / What's a second kind of house we talked about? /

S: / A small house. /

T: / A small house. Right. / And the other house was a what? /

John: / Apartment. /

T: / An apartment house. Right. / And we talked about who lived in what kinds of houses and yesterday what did we talk about? /

S: / Next door. /

T: / Yes, that's right. We talked about the boy next door. / Now today we're going to talk about how we can help in the neighborhood. What's a job you can have in the neighborhood? /

Bill: / Newspapers. You can deliver them. /

T: / Oh, that's a good idea. / Do any of you have that job? /

Monty:/ My brother has it. /

T: / Which brother has it? /

Monty:/ Jimmy. /

T: / What's another job you can have? How about a job for girls? /

Gladys:/ (Garbled). /

T: / I can't hear you. Put your hands down and speak. /

Gladys:/ You can baby-sit. /

T: / Do you baby sit Gladys? /

Gladys:/ Yeah. /

T: / Who's baby do you watch? /

Gladys:/ My aunt's baby. /

T: / That's good. / What do you do with the baby? /

Gladys:/ Play games with her. I feed her too sometimes. /

T: / Alright now I'm going to pass out some paper and I want you to draw a picture of the job that you have. Then I want you to write the name of the job under your picture. If you can't spell the words ask me and I'll write them on the board for you. Let's take some of the words now. How do you spell job? /

S: / J-o-b. ?

T: / Excellent. That was very good. You got that without any help from me. /

S: / How do you spell deliver? /

T: / I'll write it on the board here. D-e-l-i-v-e-r. (Writes deliver on the board) /

S: / I ain't got no jobs./

Teacher 47 Coder JB

T	S	T	S	T	S	T	S
1 ST-m		26 RE-R+		51		76	
2	RP-m-	27 St-m		52		77	
3 RE-R-		28	RP-m+	53		78	
4 RE-S+		29 S+-m		54		79	
5	RP-m-	30	RP-m+	55		80	
6 RE-R-		31 RE-S+		56		81	
7	RP-m+	32	X	57		82	
8 RE-RN		33 Ro-M		58		83	
9 S+-m		34	RF-m+	59		84	
10	RP-m+	35 S+-M		60		85	
11 RE-RN		36	RP-m+	61		86	
12 S+-m		37 ST-M		62		87	
13	RF-m+	38	RP-m+	63		88	
14 RE-RN		39 RE-R+		64		89	
15 RE-S+		40 ST-m		65		90	
16	RF-m+	41	RP-m+	66		91	
17 RE-R+		42 S+-m		67		92	
18 RE-S+		43	RP-m+	68		93	
19	RP-m+	44 RE-R+		69		94	
20 RE-R+		45	SP-Q	70		95	
21 ST-m		46 I		71		96	
22	RF-m+	47	SP-S	72		97	
23 RE-R+		48		73		98	
24 S+-m		49		74		99	
25	RP-m+	50		75		100	

SAMPLE READING LESSON TAPESCRIPT

T: / Open your books to page 24. / Look at the picture
at the top of the page. Is that a picture of the
city or the farm? /
S: / The farm. /
T: / Right. / Who's that in the picture? /
S: / Grandfather. /
T: / What's grandfather doing here? Look at the picture? /
S: / He's picking apples off the tree? /
T: / Good. He's picking apples. / What's he standing on? /
S: / A ladder. /
T: / Why do you think he's standing on a ladder? /
S: / The tree is too high and he can't reach the apples
because they're too high up. /
T: / Right. / Alright Tom read the first paragraph. /
Tom: / (Reads from text) "Grandfather is picking apples from
the tree. Dick wants to help Grandfather. Dick
asks Grandfather what he can do. Grandfather tells
him to hold the / ..../ (Tom can't read the next
word).
T: "basket" (T reads the word for Tom).
Tom: "Dick is happy to hold the basket."
T: / Alright what did Dick do to help Grandfather? /
S: / Hold the basket for the apples. /
T: / Good. He held the basket. / Look at the word basket
carefully so you will be able to read it because
it's on the next page. Alright Lu Ann read next./

Teacher 4L **Coder** EH

	T	S		T	S		T	S		T	S
1	R̄D - m		26			51			76		
2	ST - m		27			52			77		
3		RP - m+	28			53			78		
4	R̄E - R̄+		29			54			79		
5	ST - m		30			55			80		
6		RF - m+	31			56			81		
7	ST - m		32			57			82		
8		R̄T - m+	33			58			83		
9	R̄E - R+		34			59			84		
10	ST - m		35			60			85		
11		R̄P - m+	36			61			86		
12	ST - 1		37			62			87		
13		R̄P - 1+	38			63			88		
14	R̄E - R̄+		39			64			89		
15	ST - m		40			65			90		
16		RF - m+	41			66			91		
17		NR	42			67			92		
18	R̄E - C		43			68			93		
19		RP - m+	44			69			94		
20	ST - m		45			70			95		
21		R̄P - m+	46			71			96		
22	R̄E - R̄+		47			72			97		
23	ST - m		48			73			98		
24			49			74			99		
25			50			75			100		

ABBREVIATIONS AND DEFINITIONS OF CATEGORIES

Teacher Utterances.

1. Structuring (St)
    - A. Structuring for memory responses from students (St-m).
    - B. Structuring for integrative responses from students (St-i).

II. Reacting (Re)
    - A. Reacting to student performance by giving reinforcement.
        - 1. Positive reinforcement (Re-r+).
        - 2. Negative reinforcement (Re-r-).
        - 3. Neutral reinforcement (Re-Rn).
    - B. Reacting to student performance by asking for student evaluation of previous response (Re-e).
    - C. Reacting to student performance by giving the correct response (re-c).
    - D. Reacting to student performance by re-structuring (Re-st).

III. Informational statements (I) in which the teacher present information and does not expect a response from the students.

IV. Routine (Ro) are utterances involving non-academic matters.
    - A. Management of classroom affairs (Ro-m).
    - B. Disciplining (Ro-d).

Student Utterances.

I. Responses to teacher's structuring or reacting (Rp)
    - A. Responses involving memory (Rp-m).
    - B. Responses involving integrative processes (Rp-i).

II. Evaluation (E) involves student's evaluating previous responses.

III. Spontaneous remarks (sp).
    - A. Spontaneous questions (Sp-q).
    - B. Spontaneous statements (Sp-s).

IV. Routine (Ro) refer to management or procedural affairs.

V. No Response (NR) to structuring or reacting by the teacher.

APPENDIX E

FORMS USED IN STUDY

1. Consultant Rating Scales
    a. Use of the Curriculum
    b. Use of the Inductive Method
    c. Teacher Change
2. Lesson Observation Sheets (L.O.S.S.)
3. Observer's Summary Sheets (O.S.S.)
4. Problem Flow Chart
5. Response Set Questionnaire
6. I.R.E.C. Test of Basic Information

APPENDIX E

Item 1a

Consultant Rating Scale
Use of the Curriculum (as of May 1967)

Teacher ______________________________ Consultant ______________________________

Aspect	Rating				
1. Appropriateness and efficiency of ability grouping of children:	Always Inappropriate	Usually Inappropriate	Semi Appropriate	Usually Appropriate	Always Appropriate
(a) Reading	1	2	3	4	5
(b) Writing	1	2	3	4	5
(c) Spelling	1	2	3	4	5
(d) Social Studies	1	2	3	4	5
(e) Health and/or Science	1	2	3	4	5
(f) Over-all Academic Areas	1	2	3	4	5
2. Sequence of learnings provided:	Always Unstructured	Usually Unstructured	Semi Structured	Usually Structured	Always Structured
(a) Reading	1	2	3	4	5
(b) Writing	1	2	3	4	5
(c) Spelling	1	2	3	4	5
(d) Arithmetic	1	2	3	4	5
(e) Social Studies	1	2	3	4	5

Consultant Rating Scale
Use of the Curriculum (as of May 1967)

Teacher ____________________

Consultant ____________________

Aspect	Rating				
	Always Unstructured	Usually Unstructured	Semi Structured	Usually Structured	Always Structured
(f) Health and/or Science	1	2	3	4	5
(g) Over-all Academic Areas	1	2	3	4	5
3. Efficacy of instructional materials:	Always Inappropriate	Usually Inappropriate	Semi Appropriate	Usually Appropriate	Always Appropriate
(a) Language Arts	1	2	3	4	5
(b) Arithmetic	1	2	3	4	5
(c) Social Studies	1	2	3	4	5
(d) Health and/or Science	1	2	3	4	5
(e) Over-all Academic Areas	1	2	3	4	5
4, Social Studies	Never	Rarely	Sometimes	Usually	Always
(a) Teacher assessment of life problems of students	1	2	3	4	5
(b) Meeting of life problems of students	1	2	3	4	5
(c) Learnings presented in a problem solving context based on life problems	1	2	3	4	5
(d) Degree of correlation between social studies and other subject matter areas	1	2	3	4	5

Consultant Rating Scale
Use of the Curriculum (as of May 1967)

Teacher ____________________ Consultant ____________________

Aspect	Rating				
5. Curriculum Emphasis:	Never	Rarely	Sometimes	Usually	Always
(a) Stress on academic learnings	1	2	3	4	5
(b) Stress on social learnings	1	2	3	4	5
6. Learning atmosphere (i.e., teacher dominance and student dependence)	Maximal Student Dependence	Minimal Student Dependence	Vacillation Between Student Dependence & Independence	Minimal Student Independ.	Maximal Student Independ.
(a) Language Arts	1	2	3	4	5
(b) Arithmetic	1	2	3	4	5
(c) Social Studies	1	2	3	4	5
(d) Health and/or Science	1	2	3	4	5
(e) Over-all Areas	1	2	3	4	5

APPENDIX E

Item 1b

Consultant Rating Scale
Use of Inductive Method (as of May 1967)

Teacher ______________________

Consultant ______________________

Aspect	Rating				
1. Type of teaching used most frequently in academic subjects:	Rote	Between rote and directive	Directive	Between directive and inductive	Inductive
(a) Language Arts	1	2	3	4	5
(b) Arithmetic	1	2	3	4	5
(c) Social Studies	1	2	3	4	5
(d) Health and/or Science	1	2	3	4	5
(e) Over-all Academic Subjects	1	2	3	4	5

2. Type of teaching used most frequently in non-academic subjects:	Rote	Between rote and directive	Directive	Between directive and inductive	Inductive
(a) Physical Education	1	2	3	4	5
(b) Music	1	2	3	4	5
(c) Art	1	2	3	4	5
(d) Over-all Non-academic Subjects	1	2	3	4	5

Consultant Rating Scale
Use of Inductive Method (as of May 1967)

Teacher ______________________________ Consultant ______________________________

Aspect	Rating				
	Rote	Between rote and directive	Directive	Between directive and inductive	Inductive
3. Type of teaching used most frequently in classroom management.	1	2	3	4	5
	Rote	Between rote and directive	Directive	Between directive and inductive	Inductive
4. Type of teaching used most frequently for academic areas, non-academic areas and classroom management combined.	1	2	3	4	5
5. Appropriateness of use of inductive method in academic areas (Fill in only if rating of 4 or 5 was given to #1).	Always Inapprop.	Usually Inapprop.	Semi Appropriate	Usually Appropriate	Always Appropriate
(a) Language Arts	1	2	3	4	5
(b) Arithmetic	1	2	3	4	5
(c) Social Studies	1	2	3	4	5
(d) Health and/or Science	1	2	3	4	5
(e) Over-all Academic Areas	1	2	3	4	5

Consultant Rating Scale
Use of Inductive Method (as of May 1967)

Teacher ____________________ Consultant ____________________

Aspect	**Rating**				
6. Appropriateness of use of inductive method in non-academic areas (Fill in only if rating of 4 or 5 was given to #2)	Always Inapprop.	Usually Inapprop.	Semi Appropriate	Usually Appropriate	Always Appropriate
(a) Physical Education	1	2	3	4	5
(b) Music	1	2	3	4	5
(c) Art	1	2	3	4	5
(d) Over-all Non-academic Areas	1	2	3	4	5
7. Appropriateness of use of inductive method in classroom management (Fill in only if rating of 4 or 5 was given to #3)	Always Inapprop. 1	Usually Inapprop. 2	Semi Appropriate 3	Usually Appropriate 4	Always Appropriate 5
8. Appropriateness of use of inductive method for academic areas, non-academic areas, and classroom management combined (Fill in only if rating of 4 or 5 was given to #4)	Always Inapprop. 1	Usually Inapprop. 2	Semi Appropriate 3	Usually Appropriate 4	Always Appropriate 5

Consultant Rating Scale
Use of Inductive Method (as of May 1967)

Teacher ______________________ Consultant ______________________

Aspect	Rating				
DIMENSIONS OF INDUCTIVE METHOD					
	Always Disorganized	Usually Disorganized	Semi Organized	Usually Organized	Always Organized
9. Initial structure of stimuli in situation.	1	2	3	4	5
10. Relevance of cues:	Always Inappropriate	Usually Inappropriate	Semi Appropriate	Usually Appropriate	Always Appropriate
(a) Selection of cues appropriate to child's vocabulary level.	1	2	3	4	5
(b) Selection of cues appropriate to child's experiential background.	1	2	3	4	5
	Always Inappropriate	Usually Inappropriate	Semi Appropriate	Usually Appropriate	Always Appropriate
11. Appropriateness of reinforcement (i.e, timing and nature of reinforcement).	1	2	3	4	5

Consultant Rating Scale
Use of Inductive Method (as of May 1967)

Teacher ______________________ Consultant ______________________

Aspect	Rating				
12. Teacher's response to incorrect student response:	Never	Rarely	Sometimes	Usually	Always
(a) Asks for student evaluation	1	2	3	4	5
(b) Re-structures	1	2	3	4	5
(c) Rephrases	1	2	3	4	5
	Never	Rarely	Sometimes	Usually	Always
13. Opportunity provided for children to discover the underlying generalization	1	2	3	4	5
14. Summarizing at the end of a sequence:	Never	Rarely	Sometimes	Usually	Always
(a) By pupils	1	2	3	4	5
(b) By teacher	1	2	3	4	5

APPENDIX E

Item 1c

Consultant Rating Scale
Teacher Change (from Sept. '65 to May '67)

Teacher ____________________ , Consultant ____________________

Aspect of Change	Rating				
1. Use of inductive method - degree of change necessary at start of study	Maximum Change Required 1	Between maximum And Medium Change Required 2	Medium Change Required 3	Between Medium And No Change Required 4	No Change Required 5
2. Use of inductive method - amount of change made by teacher at end of study (Do not fill in if #1 rated as 5)	Maximum Negative Change 1	Limited Negative Change 2	No Change 3	Limited Positive Change 4	Maximum Positive Change 5
3. Independence in use of inductive method at the end of the study (i.e., teacher does not need consultant anymore)	Maximum Need 1	Between maximum & medium need 2	Medium Need 3	Between no & Medium Need 4	No Need 5
4. Use of experimental curriculum - degree of change necessary at start of study.	Maximum Change Required 1	Between maximum and medium change required 2	Medium Change Required 3	Between Medium And No Change Required 4	No Change Required 5
5. Use of experimental curriculum - amount of change made by teacher at the end of the study (Do not fill in if #4 rated as 5)	Maximum Negative Change 1	Limited Negative Change 2	No Change 3	Limited Positive Change 4	Maximum Positive Change 5

Consultant Rating Scale
Teacher Change (from Sept. '65 to May '65)

Teacher ______________________ Consultant ______________________

Aspect of Change	Rating 1	2	3	4	5
6. Independence in use of experimental curriculum at the end of the study (i.e., teacher does not need consultant anymore)	Maximum Need	Between Maximum & Minimum Need	Medium Need	Between Medium & No Need	No Need
7. Handling of classroom management problems degree of change necessary at the start of the study	Maximum Change Required	Between Maximum and Medium Change Required	Medium Change Required	Between Medium and No Change Required	No Change Required
8. Handling of classroom management problems amount of change made by teacher at the end of the study (Do not fill in if #7 rated as 5)	Maximum Negative Change	Limited Negative Change	No Change	Limited Positive Change	Maximum Positive Change
9. Independence in handling classroom management problems at the end of the study (i.e, does not need consultant anymore)	Maximum Need	Between Maximum and Medium Need	Medium Need	Between Medium & No Need	No Need
10. Implements consultant's recommendations	Maximum Inappropriate Implementation	Limited Inappropriate Implementation	No Implemen.	Limited Approp. Implemen.	Maximum Approp. Imple.

Consultant Rating Scale
Teacher Change (from Sept. '65 to May '67)

Teacher ________________________ Consultant ________________________

Aspect of Change	Rating				
11. Incidence of teacher's requests for consultant's assistance (i.e., expression of need for service or support)	Maximum disproportionate to situation	Limited disproportionate to situation	None	Limited Proportionate to situation	Maximum Proportion. to situation
(a) At start of study	/ 1	/ 2	/ 3	/ 4	/ 5
(b) At end of study	/ 1	/ 2	/ 3	/ 4	/ 5
12. Teacher receptivity to consultant's recommendations:	Antagonistic	Skeptical	Indifferent	Cautiously Receptive	Openly Receptive
(a) At start of study	/ 1	/ 2	/ 3	/ 4	/ 5
(b) At end of study	/ 1	/ 2	/ 3	/ 4	/ 5

APPENDIX E

Item 2

LESSON OBSERVATION SUMMARY SHEETS (L.O.S.S.)

Teacher ______________________ Date: __________ Class #________

Consultant ______________________ Time: __________ Visit #________

General Activity

Apparent or Stated Objective:

Instructional Cluster: (Type, membership)

Instructional Material: (A-V, commercial, non-commercial; relatedness to activity, appropriateness for group)

Introduction: (Set, relatedness, clarity, pupil-planning)

Specific Activities: (Type, scope, sequence)

Physical Setup: (Material, seating, light, heat, etc.; diagram of setting, dependent and independent groups)

a. Teaching Behavior: Ratio of Inductive vs. Non-inductive: (Questions, use of verbal and/or non-verbal cues; reinforcement, type and amount; reassessment of pupil and/or teacher behaviors; restructuring cues and/or behaviors)

b. Curriculum Content: (Use of Illinois Plan; level and sequence of presentation; attention of physical, social and psychological aspects of skills being taught; intercorrelation of knowledge and social studies areas)

c. Management of Class: (Approach to distractive behavior and discipline, type and amount; teacher-pupil interaction; pupil-pupil interaction; teacher's voice quality and vocabulary; handling unusual situations, pupil planning)

d. Conclusion & Follow up: (Summary and/or evaluation; use of group and/or individual appraisal; structured and/or unstructured application; pupil planning)

e. Management of Pupils Working Independently: (Type of activity; grouping; seating materials; clarity of instruction, follow-up)

Items for Discussion:

Specific Recommendations:

APPENDIX F
Item 3

FOE D-016
OBSERVERS' SUMMARY SHEET (O.S.S.)

Teacher ______________________ Date ______________________
District ______________________ Time __________ to __________
School ______________________ Observer ______________________
Class Number ______________________

I. Time Sample Summary:

Periods

	1	2	3	4	5	6	7	8	9	10	11	12
Clock Time												
Instructional Time												
% Instructional Time												
Type of Lesson Observed												

General Observations or Comments:

A. Reading and Language Arts
Group No. Basal Reader Title - Level Publisher

Group No. Workbook Title - Level Publisher

II. Materials Used:

A. Reading and Language Arts (contd.)
Group No. Teacher Made Materials - Describe

Group No. Commercially Prepared Worksheets - Publisher

Group No. Games, kits, and other boxed materials. - Publisher or Company

Group No. Miscellaneous - Describe

B. Arithmetic
Group No. Textbook Title - Level Publisher

Group No. Workbook Title - Level Publisher

Group No. Teacher Made Materials - Describe

Group No. Commercially Prepared Worksheets

Group No. Games, kits, and other boxed materials - Publisher or Company

Group No. Miscellaneous - Describe

C. Science
Description of Materials ______________________

D. Social Studies
Description of Materials ______________________

E. Miscellaneous
Explain ______________________

III. Grouping Technique

Type of Group

___ 1. Individual Work ( )
___ 2. Small Groups ( )
___ 3. Whole Class ( )
___ 4. Other (Specify) ( )

Grouping Based On

___ 1. Grade Level
___ 2. Specific Disability
___ 3. Other (Specify)

Note: In the parentheses indicate the academic area under observation, i.e., arithmetic, reading, social studies, etc. Use appropriate abbreviations -- A for arithmetic, R for reading, SS for social studies, S for science.

IV. Correlation

Is there evidence of correlation among academic areas, (i.e., language arts with social studies; arithmetic with science, etc.)

Describe:

V. Teaching Techniques

Indicate by checking appropriate level on dichotomy

A. Method:

Area	Rote			Directed			Inductive
Reading	1	2	3	4	5	6	7
Arithmetic	1	2	3	4	5	6	7
Social Studies	1	2	3	4	5	6	7
Science	1	2	3	4	5	6	7

B. Learning Atmosphere:

Area	Teacher Dominated			Semi Independent			Child Dominated for Discovery
Reading	1	2	3	4	5	6	7
Arithmetic	1	2	3	4	5	6	7
Social Studies	1	2	3	4	5	6	7
Science	1	2	3	4	5	6	7

C. Orientation of teaching materials

Area	Textbook			Combination		Experience	
Reading	1	2	3	4	5	6	7
Arithmetic	1	2	3	4	5	6	7
Social Studies	1	2	3	4	5	6	7
Science	1	2	3	4	5	6	7

VI. The Inductive Method

Yes No 1. Structure (Examples ______________________________
Yes No 2. Cues (Examples ______________________________
Yes No 3. Reinforcement (Examples ______________________________
Yes No 4. Rephrasing (Examples ______________________________
Yes No 5. Restructuring (Examples ______________________________
Yes No 6. Opportunity for discovery of generalization (Example ________
Yes No 7. Summary (Example ______________________________
Yes No 8. Follow through (Example ______________________________

VIII. Comments and observations related to non-project variables. Type of discipline and management, etc.

PROBLEM FLOW CHART

Specific Recommendations:

		Teacher	School		
Definition of Problem	Recommendations based upon Supervisor - Teacher Conference	Teacher's Execution of Recommendations	Consultant's and Teacher's Evaluation of Effectiveness of Recommendation	Refinement of Recommendation or New Course of Action	Follow Up On Problem

APPENDIX E

Response Set

Item 5

Name ______________________ Teacher's Name ______________________

Date ______________________ Tester ______________________

Score on 1-10 ______________ Score on 21-30 ______________

1. How many hands do you have? ______________________
2. What is the name of this finger? (shows thumb) ______________________
3. What do you do with a pencil? ______________________
4. From what animal do we get milk? ______________________
5. What is your teacher's name? ______________________
6. What do you do with a chair? ______________________
7. What do you do when you are thirsty? ______________________
____
8. Why do we have stoves? ______________________
____
9. What is window made of? ______________________
10. What do we do with our eyes? ______________________
11. What's President Johnson's phone number? ______________________
12. Why does the sun shine? ______________________
____
13. What makes it rain? ______________________
____
14. Why are there 7 days in a week? ______________________
____
15. Why does water run down hill? ______________________
____
16. Why is ice cold? ______________________
____

Response Set

17. Why does the wind blow? ______

18. Why is grass green? ______

19. What's President Johnson's mother's first name? ______

20. What day of the week will Christmas be this year? ______

21. What do we do with our ears? ______

22. What is a house made of? ______

23. What do you do with a telephone? ______

24. Why do we have books? ______

25. What kind of store do we buy oranges in? ______

26. What is the thing to do when you cut your finger? ______

27. On what do you sleep? ______

28. What do you do when you are hungry? ______

29. How many feet do you have? ______

30. What is the name of your school? ______

APPENDIX E

Item 6

I.R.E.C.

TEST OF BASIC INFORMATION

James W. Moss

Instructions for Administration

Pass out the test booklets and be sure that each child has a soft pencil or crayon and a piece of tagboard about 2" by 8" for a place marker. Have the children put their names on the front cover of the booklets. Where this is not practical the teacher should have the children's names already on the booklets before passing them out.

In the administration of this test the examiner must adhere strictly to the wording of the items. All other instructions to the class except for the actual items may be paraphrased as long as the original meaning is maintained and nothing is added or left out.

The first page of pictures is for practice and demonstration only and is not scored. The object of this page is to provide practice with the test materials and to instruct the children in the method of responding. The examiner should speak slowly, distinctly, and loudly enough to be easily heard by all the children. Test items may be repeated if there is any doubt that the children hear or understand. The test is not timed but should progress as rapidly as practical.

Demonstration Items

The examiner should tell the children to open their booklets to the first page of pictures and fold the booklet back. The examiner should hold her own folded booklet up to demonstrate and make sure that each child is on the appropriate page.

Ask the children to find the kitty at the top of the page and put a mark on it with their crayons. See that everybody does this and look to make sure that the mark is dark enough and well enough placed.

Have the children place their markers under the first row of pictures and make sure that all have them correctly placed.

Say: Look at the first row of pictures. There is a hair pin, a safety pin, a nail, and a paper clip. These are all things you might find around the house. Put a mark on the one made to fasten pieces of wood together.

Ask: "How many put a mark on the picture of a nail?" Say: "Yes, the nail is the one made to fasten wood together." Look to see if all the children made the correct response. If a child marks an incorrect picture, help him to find the right one.

B. Say: Slide your markers down to the next row of pictures - below the books. Put a mark on the heaviest book.

Make sure that every child has made a mark. The teacher should hold up her own booklet pointing to the last picture in the row as she says: Did you put your mark on this one, the biggest one? Yes, the biggest one is the heaviest one.

C. Say: Slide your markers down to the next row of pictures. Put a mark on the picture of the thing that could hurt you if you used it wrong.

Looks to see if everybody has marked the hammer. Ask: Did you all mark the hammer? Yes, the hammer is the one that could hurt you if you used it wrong.

D. Say: Slide your markers down to the next row of pictures. Put a mark on the baker.

Ask if everybody marked the picture of a man with a big hat and a cake. Where a child has marked the wrong picture he should be helped to find the right one.

E. Say: Slide your markers down to the last row of pictures. Put a mark on the picture of the room we wash dishes in.

Look to see that the children have marked their pictures correctly. Explain the item if any children have marked incorrectly.

****

The children are told that they will now go through the rest of the booklet with as little talking as possible and that no more help will be given. At the beginning of each item, the children are reminded to properly place their markers at the top of a new page or to slide them down.

TEST ITEMS

Say: Turn the booklet over and find the picture of a baseball at the top. Put a mark on it.

1. Mark the one that measures liquid.
2. Mark the picture of someone who is married.
3. Mark the picture that shows us winter.
4. Put a mark on the one that makes us healthy.
5. Put a mark on the one we measure distance with.

Say: Turn the page and fold the booklet back. Find the bicycle at the top and put a mark on it.

6. Mark the things that are bought most often.
7. Mark the picture that shows where wheat comes from.
8. Mark the narrow line.
9. These are all things we listen to. Mark the musical instrument.
10. Mark the one that makes a signal go off in the fire station.

Say: Turn the booklet over and find the dog at the top. Put a mark on it.

11. Mark the traffic signal that tells you to stop.
12. Put a mark on the one that could burn up. (Emphasize up.)
13. Mark the fastest way to get from Chicago to San Francisco.
14. Here are some squares with coins. Put a mark in the square with seven cents in it.
15. Mark the one that doesn't buy much.

Say: Turn the page and fold the booklet back. Find the apple at the top and put a mark on it.

16. Put a mark on the arrow that tells you to turn right.
17. Mark the coin that is worth two nickels.
18. Mark the arrow that tells you to turn to the left.
19. Mark the picture that shows where oil first comes from.
20. Here are pictures of things that go places. Mark the one that goes the fastest.

Say: Turn the booklet over and find the little car at the top. Put a mark on it.

21. Mark the one that costs the most money.

22. Here are four squares with coins in them. Put a mark in the square that has eleven cents in it.

23. Put a mark on the picture of the thing which makes heat.

24. Mark the one that shows what you might do in December.

25. Mark the picture that shows the best way to get from New York to England.

Say: Turn the page and fold the booklet back. Find the shoe at the top and put a mark on it.

26. Mark the picture that shows what birds first come from.

27. Mark the picture that shows what leather is made from.

28. Mark the picture that shows where electricity is made.

29. Here are some things you might find in different stores. Put a mark on the things you might find in a hardware store.

30. Mark the one that is usually sent first class.

Say: Turn the booklet over and find the clock at the top. Put a mark on it.

31. Mark the sign that says "North".

32. Mark the door that shows the men's washroom.

33. Mark the sign that warns that something may burn you.

34. Put a mark on the sign that tells you not to go in.

35. Mark the sign that says "Road Closed."

Say: Turn the page and fold the booklet back. Find the bird at the top and put a mark on it.

36. Mark the sign that tells a man to put out his cigarette.

37. Mark the sign that tells you where to catch a bus.

38. Mark the sign that would tell your mother where to find apples and oranges in the store.

39. Mark the sign that tells you where to go out.

40. Mark the sign that tells you to be careful.

APPENDIX F

Probability Learning Directions

"We're going to play a little game with this box."

> "Every time I say ready, you push one of these buttons. Try to make this light (point to light) go on. Push only one button at a time after I say ready."
>
> "Every time you make the light go on, you'll get a chip. When we're all finished, you can trade your chips in for a prize so try to get lots of chips."

Rotate the reinforcement schedules. With the first child, start with block 1 and go through 10. With the second child, start with 2 and go through 1. Do this for all 10 blocks.

Rotate the knob to be reinforced (i.e., A, B, or C). One third should be reinforced on A, another third on B, etc. The first child should be reinforced on A, the second on B, etc.

On the second sheet write the block started with and the knob reinforced. Check the letter for the knob pushed on each of the 100 trials. After testing, make a check mark in front of all trials which were reinforced.

APPENDIX G

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